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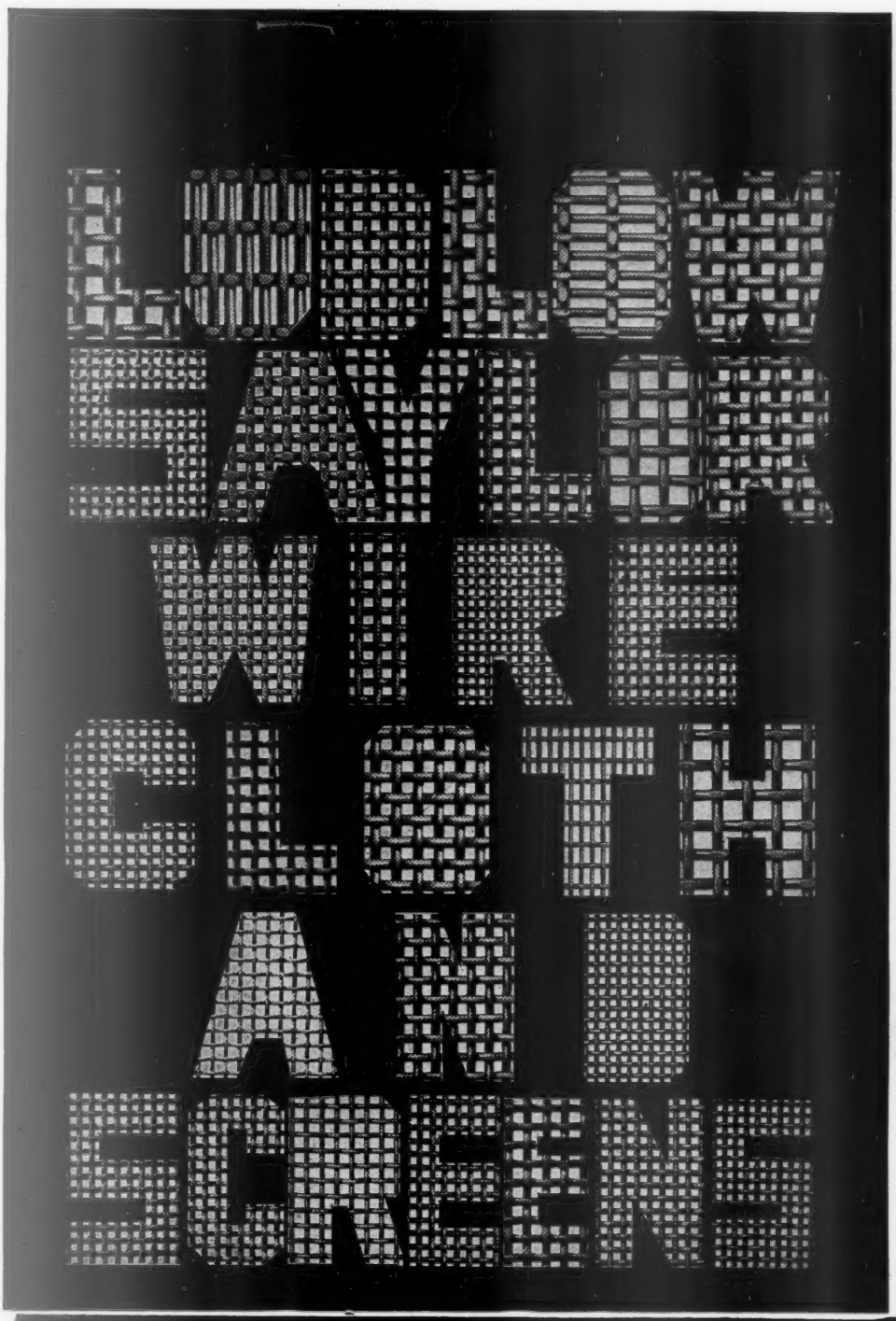
FEBRUARY 1948

PIT AND QUARRY

Reports on National Sand & Gravel, Agricultural Limestone Conventions • Notes on Brita... Building Exhibit • Reports on Missouri Limestone Producers Meeting and Pennsylvania Stone Producers' Aggregates Meeting • ...regation in Coarse Aggregates



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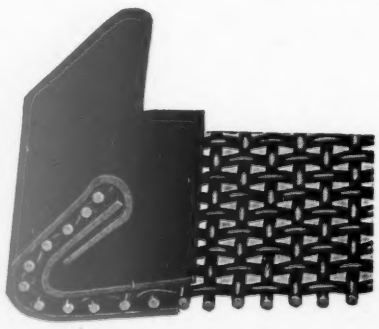

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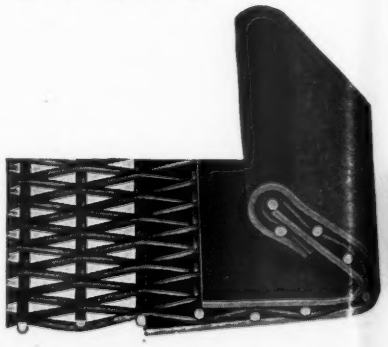
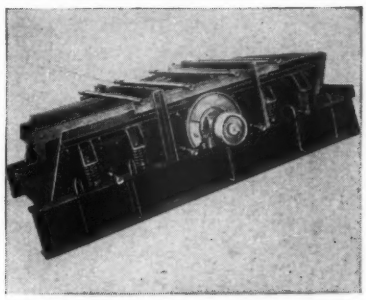


on production sheets

increase efficiency



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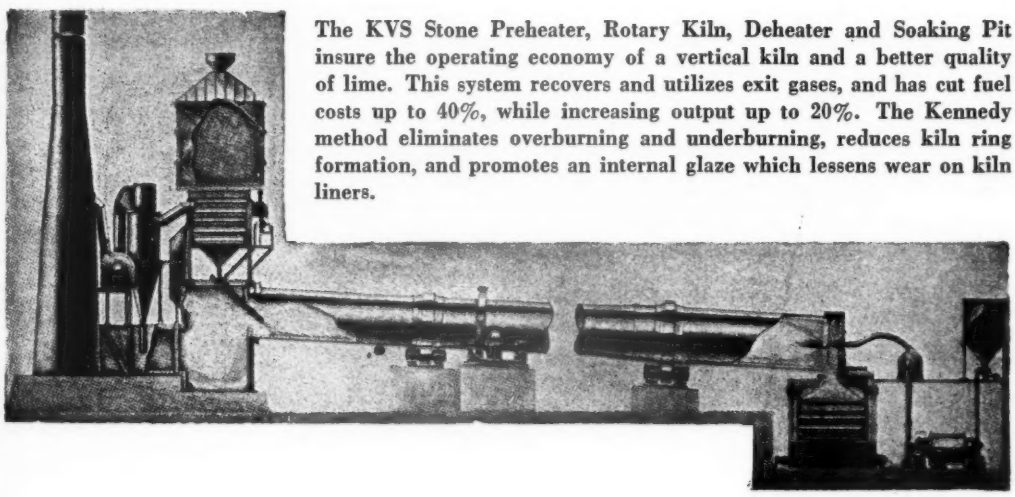

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PIT AND QUARRY

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MEMBER AUDIT BUREAU OF CIRCULATIONS

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To subscribers: Data on lower right-hand corner of envelope indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

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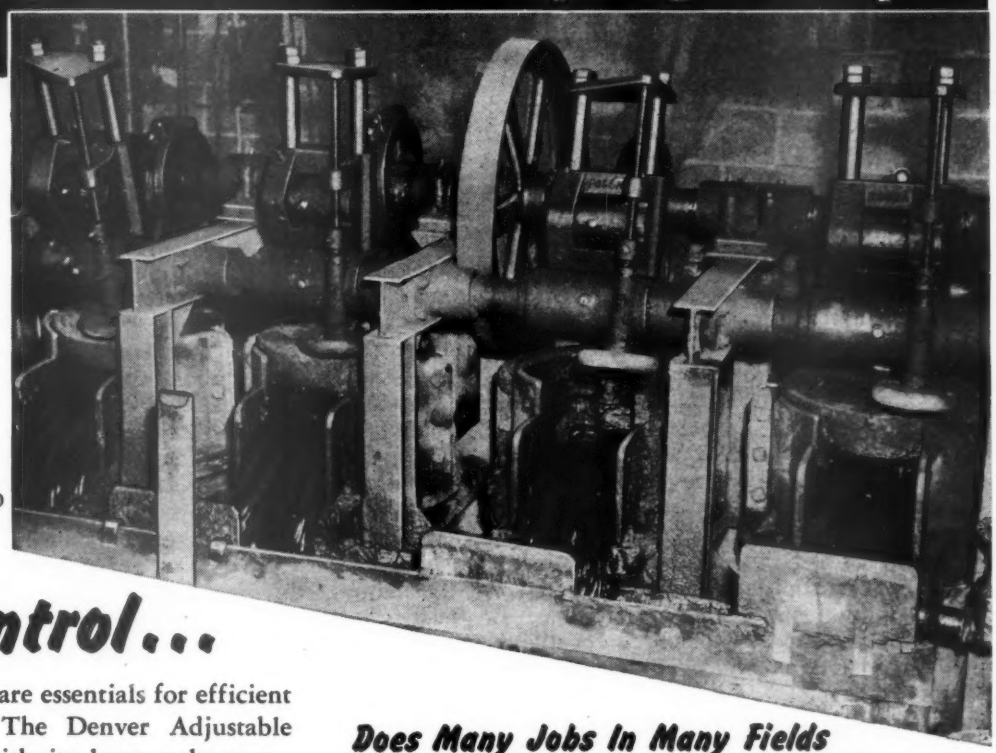

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EDITORIAL

The Aggregates Conventions

WE are glad to be able to report that, as predicted on this page in the last issue, the aggregates conventions recently held at the Netherland Plaza Hotel in Cincinnati surpassed all previous meetings in every way—in attendance, in the importance and variety of subjects discussed, in the number and attractiveness of the machinery exhibits, and in the general spirit of optimism and cooperation which prevailed.

The success of these meetings is a tribute to the paid staffs of these associations—Vincent P. Ahearn, executive secretary, and Stanton Walker, director of engineering, of the National Sand and Gravel Assn. and the National Ready Mixed Concrete Assn.; J. R. Boyd, administrative director, and A. T. Goldbeck, engineering director, of the National Crushed Stone Assn.; and Henry A. Huschke, managing director of the Agricultural Limestone Division of the N.C.S.A.—and their competent assistants. Much credit is also due the presidents of these associations whose terms ended with close of these meetings—Richard N. Coolidge of the N.S.G.A., Frank P. Spratlen Jr. of the N.R.M.C.A., G. A. Austin of the N.C.S.A., and S. P. Moore of the Agricultural Limestone Div. of the N.C.S.A.—and their officers, boards and committees.

The success of the first machinery exhibits since 1942 must be attributed largely to the chairmen of the manufacturers divisions of these associations—E. J. Goes for the N.S.G.A. and J. B. Terbell for the N.C.S.A.—and their boards and committees, and to L. W. Shugg, director of exhibits.

Complete official figures on registered attendance are not yet available, but there is no doubt that all former records in all categories were broken by wide margins. The combined N.S.G.A. and N.R.M.C.A. conventions drew a total of about 1200. This included 204 producers of sand and gravel only, 127 producers of sand and gravel and ready-mixed concrete, 243 producers of ready-mixed concrete only, 45 guests (many of them also producers), 103 ladies, and 465 machinery men, etc. The registration at the combined conventions of the N.C.S.A. and its Agricultural Limestone Division is estimated unofficially at over 850, which is far ahead of the best previous mark. This record figure included 304 member producers, 167 guests (largely non-member producers and ladies), and 379 associate members.

The exhibitors at these shows drew an unexpected bonus through the meeting in Cincinnati at the same time of the Operating Division of the National Lime Assn. Attendance at the exhibit was a scheduled part of the program of this body and met with such unanimous approval that it is quite possible that similar arrangements will be made in the future for exhibit years.

Those who were not able to attend these conventions should by now have some idea of what they missed. Space prevents us from presenting word for word the many interesting subjects discussed but much can be learned from our reports of the N.S.G.A. convention in this issue and of the other three meetings in the March issue. Photographs in the March issue will give some idea of the caliber of the machinery exhibits. Only by attendance, however, can the fullest benefits be derived from the many interesting discussions, both in the meetings and out, where producers compare problems and their solutions to their mutual advantage.

Thirty Years Ago in Pit and Quarry

THE present generation is perhaps prone to overlook or ignore the past; and largely for them, but also for the many old-timers who like to reminisce, we are presenting for the first time in this issue a new monthly feature, "Thirty Years Ago in Pit and Quarry." We could have gone somewhat further back, but 30 is a good round number and some of the most important of the nonmetallic minerals industries were then just becoming of age. Ye Ed does not date quite that far back but in nearly 20 years of close contact with these industries feels that he has learned much of the old and the new and can point out some of the things which have changed and also some which remain essentially unchanged.

These issues of 30 years ago show a surprising basic similarity to the current ones. Then, as now, PIT AND QUARRY was dedicated to providing the readers—nonmetallic minerals producers—with important information of all kinds affecting their industries. This information included news and personal items, technical and operating articles, plant descriptions, descriptions of new machinery and methods, etc., even as today. Much was said about association and federal activities.

Appended is a partial list of the advertisers in the 1918 issues who are still advertisers, some under different names:

American Manganese Steel Div. of Amer. Brake Shoe and Foundry Co., Chicago Heights, Ill.
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Car Loadings of Cement And Aggregates Expected To Increase This Quarter

Freight carloadings of cement in the first quarter of 1948 are expected to be 11.7 percent above those in the same period a year ago, according to estimates by the 13 regional Shippers Advisory Boards as made public by the Association of American Railroads.

On the basis of the estimates, freight carloadings of cement will total 110,383 in the first quarter of 1948, as compared with 98,842 actual carloadings in the corresponding 1947 period.

During the same period, carloadings of gravel, sand and stone are expected to increase 5 percent, from 419,594 to 440,575; carloadings of brick and clay products are expected to jump 8.4 percent, from 63,819 to 69,195, while carloadings of lime and plaster are expected to go up 17.2 percent, from 41,103 to 48,159.

Inland Lime and Stone Output In 1947 Sets All-Time Record

A. J. Cayia, vice-president of the Inland Lime and Stone Company, Manistique, Mich., has announced that during the 1947 shipping season 381 cargoes of limestone were shipped from the company's facilities, constituting an all-time high. The last cargo left Port Inland on the SS. *Donner* on December 8.

The company's first cargo was loaded in November, 1930, and six loads were shipped before the close of navigation that year. Since 1930 a total of 4,319 cargoes of limestone have been quarried and shipped from Port Inland, and in addition 43,650 carloads by rail. A. W. Heitman, superintendent, is in charge of production.

First Purdue Agstone Meet Covers Extensive Field

Approximately 100 Indiana limestone producers met at Purdue University on January 6 and 7 for a conference sponsored by the university's agronomy department and the Indiana Mineral Aggregates Association.

The program covered basic reasons for the use of agricultural limestone, soil testing, requirements of different soils, methods being employed by the Purdue agricultural extension service to encourage the application of limestone to farmlands and methods of sales promotion. This was the first meeting of its kind in Indiana. K. E. Beeson of the university agronomy department and Ralph E. Simpson, Indiana Mineral Aggregates Association, Inc., were in charge of arrangements.

British Lime-Burning Firm To Install Ellernan Calciner

John & E. Sturge, Ltd., Birmingham, England, has purchased, through the Power-Gas Corporation, Ltd., Stockton-on-Tees, England, an Ellernan calciner, developed by the Ellernan Company, of Salt Lake City. Power-Gas Corporation has manufacturing and sales rights for the equipment in the British Isles, India, South Africa and Australia.

The Sturge concern, dissatisfied with the quality of their product, burned lime, were favorably impressed with samples of lime processed in Ellernan calciners. A unit was ordered for the production of lime and CO_2.

Coming Events

February 15-19, 1948—New York. Annual meeting, American Institute of Mining and Metallurgical Engineers, Pennsylvania Hotel.

February 15-19, 1948—Chicago. 29th annual meeting, Associated Equipment Distributors, Edgewater Beach Hotel.

February 23-26, 1948—Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948—Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

April 5-7, 1948—Hot Springs. Annual convention, National Lime Association, The Homestead.

1947 Limestone Cargoes On Great Lakes Exceed All Tonnages on Record

Movement of limestone on the Great Lakes during 1947 set a new all-time record, according to the Lake Carriers' Association.

The association also reported a combined total of 175,548,110 net tons of iron ore, coal, grain and limestone, representing a 21.5 percent increase above the previous peacetime high of 138,574,441 tons in 1929.

However, total shipments were slightly below the wartime average of 177,982,579 tons set in the years of 1941-1945.

ICC Authorizes 20 Percent Increase in Freight Rates

A further increase of freight rates from 10 percent (last October) to 20 percent was granted to railroads by the Interstate Commerce Commission on December 31, 1947. This increase will be in effect until June 30, 1948. All railroad and water carriers and freight forwarders were authorized to put the new rates into effect five days after giving public notice.

The ICC stressed two aspects of the move—that this increase supersedes the October advance and that the figure is merely temporary. Spokesmen for the commission stated that "there is need for further substantial increases" in freight rates.

Asphalt Institute Directors Name A. M. Maxwell President

A. M. Maxwell, vice-president of the Standard Oil Company (Ohio), was elected president and executive committee chairman of the Asphalt Institute at the annual meeting of the board of directors last December. The following newly elected vice-presidents, with Mr. Maxwell, compose the executive committee:

Division I, Atlantic-Gulf, Wallace D. Craig; Division II, Ohio-Great Lakes, D. N. Myers; Division III, Mid-West, L. W. Lee; Division IV, Southwest, Harold J. Buck; Division V, Pacific Coast, N. H. Angell.

Re-elected to their former offices were the following: Bernard E. Gray, general manager and chief engineer; Herbert Spencer, secretary; F. V. Widger, treasurer; J. N. Smith, assistant treasurer.

Natl. Gypsum Company's $2,000,000 Plant Begins Production at Norfolk

At Norfolk, Va., the 64th plant of the United States Gypsum Company has begun production of plaster and wallboard. The $2,000,000 facilities, perhaps the most modern ever built by the company, will produce plaster at the rate of 120 tons per day and wallboard of two types at the rate of 350,000 square feet daily.

Incoming raw gypsum from Nova Scotia is carried from piers on the Southern Branch to a storage plant and thence to the processing plant. The latter is composed of a series of connected structures with an over-all length of 1,440 feet.

FHA Resumes Aid to Industry As President Endorses Bill

Signing by the President on December 27, 1947, of the bill increasing insurance authorization under Title VI of the National Housing Act means that the Federal Housing Administration can resume at once effective aid to private industry in providing urgently needed housing for veterans, according to Commissioner Franklin D. Richards. The new legislation increases the insurance authorization $250,000,000 immediately, with an additional $500,000,000 authorization available at the discretion of the President.

The basis for selecting applications for processing and issuing commitments will be fourfold: (1) efforts will be made to see that a major portion of all commitments issued are for rental units; (2) commitments will not be issued in excess of the builder's capacity to complete construction during the term of the commitment; (3) commitments will not be issued in excess of the estimated market absorption; (4) preferential consideration will be given to those applications offering the best possibilities for the production of housing at the lowest prices and rents.

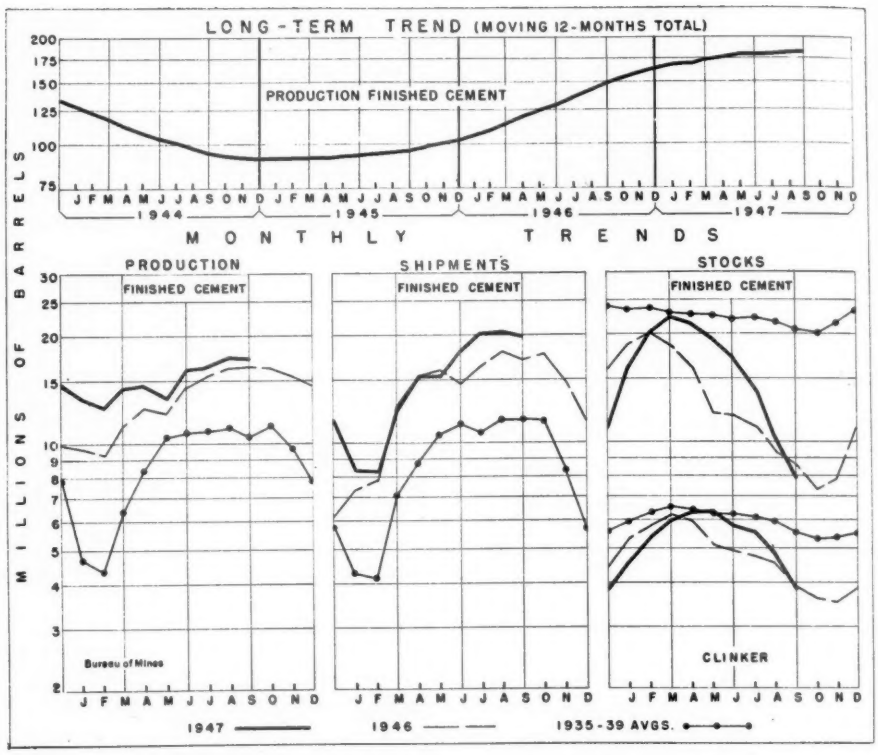
Kentucky's 1947 Highway Bill Estimated at $23,000,000

The Kentucky State Highway Department disclosed on January 1 that an estimated $23,000,000 worth of contracts for improvements and construction of Kentucky state highways had been awarded during 1947. This was estimated $5,000,000 above the previous peak recorded in 1946. The report stated that approximately 2,050 miles of highways were included in the construction and improvement projects of 1947, as compared with 1,999 miles in 1946.

Bull Shoals Cement Contract Awarded to Universal Atlas

A contract for 270,000 barrels of cement, to be used in the construction of the Bull Shoals Dam has been awarded by the United States Engineers to the Universal Atlas Cement Company.

The amount of the winning bid was reported to have been $283,500. Delivery of the cement is scheduled to begin this spring.



Production of 17,319,000 barrels of portland cement in September, 1947, reported to the U. S. Bureau of Mines, was 5 percent greater than that reported for September, 1946, the peak month of that year. Mill shipments reached 19,840,000 barrels in September, 1947, a figure 16 percent greater than that reported for September, 1946. Stocks of finished cement continued to decline and on September 30 stood at 7,931,000 barrels, a decrease 8 percent below that reported for September 30, 1946. Production of 135,296,000 barrels of cement in the first three quarters of 1947 represents an increase of 15 percent over the output for the same period in 1946.

The percentage of capacity utilized in September, 1947, was 88 percent, an increase of 5 percent over that reported for September of 1946. Seventy-five percent of capacity was utilized in the January-September period of 1947, an increase of 10 percent over that reported for the same period of the previous year.

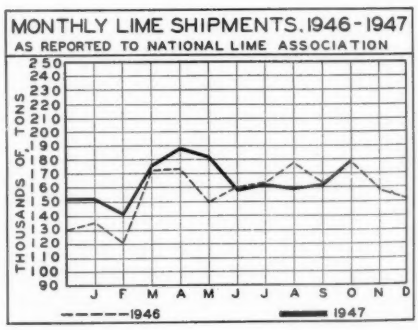
The long-term trend in production of finished portland cement is indicated in the accompanying chart. Monthly production, shipments, and stock trends, compared with the 1935-39 average, are also indicated graphically.

Extensive Perlite Deposits Found in Napa County, Calif.

According to an announcement released by Olaf P. Jenkins, chief of the California Division of Mines, large deposits of perlite, a mineral used for light-weight aggregates, have been discovered in Napa County.

The existence of the material, which occurs in volcanic beds, was discovered by Professor N. L. Taliaferro and his assistants. It was stated that the deposits range in thickness from 20 feet at the southern end to several hundred feet at the northern limit. At one point they are two miles east of the railroad station at Rutherford.

A fire resulting from an explosion aboard the pump barge operated by the White River Materials Company near Hazelton, Ind., recently destroyed the barge and other equipment. Backfiring of a diesel engine caused the explosion.



According to data collected by the National Lime Association, 45 companies in October, 1947, shipped 179,209 tons of lime (105,796 quicklime; 73,413 hydrate). Reporting companies represent 47.9 percent of the association members' total capacity of record. Based on Pit and Quarry's estimates for the remainder of the industry, the total shipments for the month by all plants were approximately 411,500 tons. Shipments of lime by uses and grades for October, 1947, were:

	Quicklime (tons)	Hydrate (tons)
Agricultural	2,206	8,948
Building	14,473	37,276
Chemical	89,117	27,198
Total	105,796	73,413

Stirling Tomkins Resigns as N.Y. Trap Rock President—W. P. Foss III Is Successor

Stirling Tomkins, who has been an executive of the New York Rock Corporation for 21 years—first as vice-president in charge of production and since January, 1939, as president—has retired from the presidency. He will remain with the corporation in the capacity of consultant and director.

Wilson P. Foss III, a grandson of one of the founders of the concern and a son of the present chairman of the board, succeeds Mr. Tomkins as president. Mr. Foss has been associated with New York Trap Rock since 1937, with the exception of a period during World War II, when he served in the United States Navy. For the last two years he has been vice-president in charge of production.

Succeeding Mr. Foss in his former post is Dexter M. Bullard, who has been with the company since 1936, except for the months during which he served in the Ordnance Procurement Department of the United States Navy.

Production Is Resumed at Cebu Portland Cement Plant

Latest reports of activity at the Cebu Portland Cement Company's plant in the Philippine Islands indicate that operations are again progressing at the rate of approximately 3,500 bbl. per day. Present plans envision the addition of two kilns during 1948, to supplement the two 10- by 11- by 175- ft. kilns now in use.

According to recent news, plant operating costs, which were for a time among the "lowest in the cement industry," are expected to rise because of unsettled labor conditions.

Kanstone Company Formed as Garnett Rock Co. Subsidiary

Kanstone Company, a subsidiary of the Garnett Rock Company, Garnett, Kan., is currently building a plant in that city for the purpose of processing limestone. The structure will be of concrete block.

In addition to the production of agricultural limestone and an oil-and-grease absorbent, the new firm is considering the manufacture of concrete masonry units. In charge of building operations is James Stevenson.

Big Boom Heard—and Seen By Crowd at Wyoming Quarry

More than 60,000 pounds of dynamite was touched off recently at the Granite Canyon quarry of the Morrison-Knudsen Contract company between Cheyenne and Laramie, Wyo. An invitation to the public to watch the spectacle resulted in several hundred persons being on hand for the blast.

Blasting 150,000 cubic yards of quarry-side was the last of a series of five explosions which extended through the summer and fall months of 1947, according to Superintendent F. E. Newell. He pointed out that the quarry has crushed over 1,000,000 tons of rock since operations of machinery began on March 31, 1947. Largest of the five blasts entailed the use of 97,000 pounds of dynamite in one operation.

Idaho Portland Cement Co. 1947 Output 1,300,000 Sacks

According to an announcement released by the Idaho Portland Cement Company, its plant at Inkom, Ida., shipped a total of 1,300,000 sacks of cement between January 1 and December 24, 1947. This is the largest yearly output in the history of the company, stated Ed Dufford, vice-president and general sales manager. He added that the 1947 figure exceeded the top demand during the recent war by several thousand sacks.

New equipment has been installed at the company's plant, and it is expected that future production will continue to expand. The company distributes its product throughout the state except for few points along the Wyoming border.

Sprague, Hamme Appointed To N.L.A. Committee Posts

At the last board of directors meeting of the National Lime Association the following appointments were approved:

W. W. Sprague, National Mortar & Supply Company, chairman of the Agricultural Research Committee; and D. G. Hamme, National Gypsum Company, member of the Technical Committee.

Mr. Sprague replaces H. D. Brigstocke of the Thomasville Stone and Lime Company, and Mr. Hamme succeeds Dean Crandall, also of National Gypsum.

Bror Dahlberg of Celotex Predicts Prosperous Year For Building Industry

In a recent statement released by Bror Dahlberg, president of The Celotex Corporation, an optimistic picture is presented of the future of construction industry.

"Never before has there been such a pressing need for new and restorative construction," stated Mr. Dahlberg. "Everyone is aware of the critical shortage of housing, but our needs do not stop there. With the new homes that are built, there must be additional stores, churches, banks, schools, hospitals, theatres, public utilities and other structures essential to community life.

"There is also a tremendous need for new industrial construction. Most of our existing factories are so obsolete that future competition will force modernization or completely new construction.

"The farmer likewise figures prominently in the nation's construction picture. Besides his housing problem, which is as acute as that in the cities, there is a crying need for new agricultural buildings of all kinds.

"The business outlook in the building material field is so good that I look for no great slackening. . . ."

At the eleventh annual safety award dinner of the Colonial Sand & Stone Company of New York, N. Y., each of 14 drivers was given $50, a certificate and a gold button in recognition of 11 years of driving without an accident.

• Thirty-five men who wheel the big trucks for Permanente Cement Company recently were declared the safest drivers in their division of the San Francisco chapter of the National Safety Council. Their achievement: 1,552,000 miles driven during the year ending June 30, or the equivalent of 62 times around the world, with a record of .39 accidents per 100,000 miles. Pictured above, left to right, are Henry E. North, president of the San Francisco Chapter, National Safety Council; and the following Permanente representatives: Leonard Flicker, safety engineer; Ted Hoffman, dispatcher; long haul driver Jack Maynard; Harry Smith, industrial relations, and Henry Milovich, driver.

United States Mineral Output in 1947 Reaches All-Time High Record

The total value of minerals and mineral products produced in the United States and Alaska in 1947 reached an all-time peak of $12,400,000,000, exceeding the former record of 1946 by 40 percent, Secretary of the Interior J. A. Krug has announced. The 1946 figure was $8,859,000,000.

Last year's mineral production is evidence of the efficiency and vitality of American mineral industries and of the ability of our natural resources to contribute vast quantities of the important sinews of war and peace, Secretary Krug commented. However, he cautioned that the nation should not lose sight of the fact that mineral deposits are exhaustible, and that the rate of discovery in the United States is not keeping pace with the rapidly rising output.

Achievement of the 1947 record value of production resulted predominantly from higher commodity prices, according to the analysis submitted to James Boyd, bureau director, by the Economics and Statistics Division. Approximately one-third of the rise in value, however, was due specifically to increased tonnages produced—a consequence of unprecedented peacetime demands by industry and agriculture and of labor-management tranquillity that permitted almost full-time operations.

Total value of nonmetallic minerals (other than fuels) produced in 1947 was $1,600,000,000—22 percent more than in 1946. The most outstanding increases were made by the building materials. In general their tonnages were at or near record levels. Demand for most other nonmetallics was also at a very high level. Among the commodities that attained record production (in quantity as well as value) in 1947 were: Sulphur, potash, phosphate rock, boron, feldspar, kaolin, stone, cement, and vermiculite.

Output of construction materials, which had gained great impetus in 1946, continued to increase in 1947. Building construction was booming and consequently the clay products industry, which had been depressed since the 1920's, more than doubled its output in 1946 and added over 20 percent more in 1947. Cement production rose from 167,000,000 barrels in 1946 to about 188,000,000 in 1947, an increase of 13 percent. Sand and gravel, which are used chiefly as aggregates, increased about 8 percent to 275,000,000 short tons. Similarly, stone used as aggregate increased. Dimension stone output, which reached a low mark during the war, was recovering steadily, even though emphasis was on construction of buildings that do not use dimension stone in any substantial quantity. As demands for other stone products (for agricultural and industrial uses) also were very high, total stone production (exclusive of that used in making cement and lime) was estimated at about 200,000,000 short tons—a new record. Demand for gypsum products was taxing capacity and output rose about 7 percent.

In 1947 the American farmer was producing tremendous quantities of food for domestic consumption and for shipment to foreign countries, and in return he was receiving a record income. As he recognized the advantages of applying fertilizers and had the necessary purchasing power, demand for fertilizers exceeded the supply. Before the war much potash was imported into the United States, but our capacity has been expanded greatly and we now produce virtually as much as we consume; in 1947 domestic output exceeded 1,000,000 short tons for the first time.

Production of phosphate rock has also been increased greatly in recent years to serve domestic and foreign commercial markets and provide a substantial tonnage for the maintenance of the agriculture of occupied countries. Output in 1947 attained a record of over 9,000,000 long tons. At the end of the war most of the government-owned nitrogen plants were closed, but as the world-wide need for nitrogen became apparent nearly all of them were reactivated, either by private operators or the Department of the Army. Consequently production of nitrogen in the United States increased to 1,300,000 short tons in 1947.

Industrial demand for soda ash and other salt products has been so great that salt output in 1947 is estimated at about 15,000,000 short tons—close to the peak of 15,717,000 tons attained in 1944. Domestic demand for native sulphur also was very high in 1947 and foreign sales were the greatest in history; production reached a record total of 4,825,000 long tons. Output of pyrites, the other major source of sulphur, increased moderately to about 825,000 long tons. Production of barite, used in large quantities in oil-well drilling as well as in chemicals and lithopone, totaled about 720,000 short tons. United States provides most of the world's boron minerals; in 1947 production in this country was estimated at 460,000 short tons—a new record. Shipments of fluorspar in 1947 established a peacetime record approximating 330,000 short tons. Substantial tonnages of lithium minerals were consumed during the war but output in 1947 was at a low level. Production of natural sodium sulphate rose.

The million pounds of sheet mica produced in 1947 was much below the wartime level, largely because of the industry's difficulty in competing with the relatively low-cost and more fully prepared imported material. On the other hand, domestic production of scrap mica for roofing, etc. (52,000 short tons), was near the record high. The steel, glass, and other industries that use high-temperature furnaces were very active in 1947, and thus the demand for refractories such as silica brick, clay fire brick, and dead-burned magnesite increased. Sales of feldspar to the ceramic industry increased in 1947 and are estimated to have reached a record of over 580,000 long tons. Although both domestic and Canadian production of asbestos increased in 1947, demand far exceeded supply. Graphite output was about the same as in 1946.

Simplot Pioneers in Move For Large-Scale Expansion Of Phosphate Industry

J. R. Simplot, president of the Simplot Fertilizer Company at Pocatello, Ida., has announced an expansion of the phosphate industry which may reach multi-million-dollar proportions.

Arrangements have been made with the Westvaco Chlorine Products Corporation of New York, stated Mr. Simplot, for the construction of an electric furnace plant for the production of elemental phosphorus at a 500-acre site near Pocatello. The first furnace is expected to be in operation early in 1949.

Another indication of the anticipated boom in the phosphate industry of the northwest is the plan to construct a 21-mile railroad spur from the mines to the mainline at Fort Hall, Ida. George F. Ashby, president of the Union Pacific Railroad, has stated that recommendation for the construction of the branch would be made at once. Phosphate ore is now being trucked to the railroad.

Roscoe E. Bell, coordinator of the Western phosphate program for the Department of the Interior, has declared that probably as many as seven large plants, involving a $35,000,000 investment, would be needed to meet the "immediate foreseeable needs" of the phosphate industry in this section. Included in these facilities would be three to five electric furnace plants, one or two large sulphuric acid concentrated superphosphate plants, and possibly one blast furnace phosphorus plant.

Home Builders Convention Returns to Chicago This Year

The 1948 Annual Convention and Exposition of the National Association of Home Builders will again be held in Chicago, February 22 to 26, at the Stevens and Congress hotels. The announcement was made by W. Hamilton Crawford, Baton Rouge, La., who is chairman of the convention and exposition committee for the second consecutive year.

Other members of the committee are: Edward R. Carr, president, National Association of Home Builders, Washington; Frank W. Cortright, executive vice-president, Washington; A. J. Alexander, Akron; Alan Brockbank, Salt Lake City; James Graham, Brooklyn; Carl Gellert, San Francisco; E. P. Lamberth, Dallas; Charles R. Malowney, Tucson; Nathan Manilow, Chicago; James H. March, Tacoma; Cliff May, West Los Angeles; Joseph Meyerhoff, Baltimore; Cliff Mortenson, North Seattle; Frank Robertson, San Antonio; Frank Rooney, Miami; John M. Zerbey, Philadelphia. Paul S. Van Auken of Chicago is again convention and exposition director.

The Cape Girardeau Sand Co., Cape Girardeau, Mo., currently has in use a new sand barge from the Maxon Construction Company and a larger barge from the yards of the Dravo Corporation.

Missouri Portland Cement Reports on Progress of 5-Year Improvement Plan

Approximately $2,250,000 has been expended for the Missouri Portland Cement Company's five-year modernization plan, according to an announcement from the company.

Among the projects already completed are the barge loading dock on the Mississippi River near the company's Prospect Hill plant and a cement unloading dock and storage and shipping facilities at Memphis, Tenn. In addition, the firm has put into operation (during 1947) seven new all-steel 8000-bbl.-capacity cement barges. These are being used to carry cement from the Prospect Hill plant to the new storage facilities at Memphis.

Current projects include the installation of new primary and secondary rock crushing stations at the Fort Bellefontaine quarry and foundation work on new storage facilities, mills and kilns at the Prospect Hill plant. The program is expected to be completed during 1950.

Armour Fertilizer Works To Build Plant at Bartow, Fla.

The Rust Engineering Company, Birmingham, Ala., and Pittsburgh, Pa., has been awarded a contract by Armour Fertilizer Works, Atlanta, Ga., for the design and construction of a building for the manufacture and storage of triple superphosphate.

The building will be located near Bartow, Fla., and will be of structural steel frame, with corrugated asbestos roofing and siding. The storage shed will be equipped with two bridge cranes on parallel runways of 70-ft. span and 260-ft. length.

A complete plant site will be developed in conjunction with this project, and a new railroad station known as Armour will be established. The plant will have a capacity of 75,000 tons of triple superphosphate per year.

Rosiclare Fluorspar Operation Now Under Alcoa Mining Co.

Alcoa's fluorspar mining and milling properties at Rosiclare, Ill., have been transferred from the Aluminum Ore Company to the Alcoa Mining Company, according to an announcement form company headquarters in Pittsburgh. Both the Aluminum Ore Company and the Alcoa Mining Company are wholly owned subsidiaries of Aluminum Company of America.

There will be no change in the operating personnel; and employee benefits such as insurance, pensions, health aids, senority and all other employee relations will continue as before. The Rosiclare operations will be known as Alcoa Mining Company, Fluorspar Division, but there will be no change in management. Allen B. Williams, president of Aluminum Ore Company, whose headquarters are in St. Louis, has been made a vice-president of the Alcoa Mining Company in charge of fluorspar operations in addition to his other duties.

Morrison-Knudsen Co., Inc., and local 328 International Union of Operating Engineers (AFL) have reached an agreement for a 15-cents-an-hour wage increase for union members working at the company's gravel plant at Granite Canyon, west of Cheyenne, Wyo. The wage boost is retroactive to January 1, 1948.

Wyoming Court Action Delayed on Pay Claims Of Portal-to-Portal Suits

The final 1947 term of the United States district court of Cheyenne, Wyo., passed over four pending so-called "portal-to-portal" suits involving claims of more than $1,521,920 made by employees on their employers, pending the decisions of various other district courts on similar cases. Judge T. Blake Kennedy pointed out that that these particular suits in other courts are older and have proceeded farther than those being brought in Wyoming.

Included is a suit brought against the Monolith Portland Midwest Co. of Laramie, Wyo., by its employees, seeking a total amount of more than $156,000.

Gravel Boat's Crew Saves Captain of Burning Craft

The crew of the *Prosperity,* a motor vessel owned and operated by the Iron City Sand & Gravel Corp., Pittsburgh, Pa., recently served as rescuers in a tragic riverboat disaster near Georgetown, Pa.

The men went to the aid of the burning *J. L. Calhoun,* another motor vessel owned by Valentine & Todd and from a barge alongside rescued the craft's captain, William Price. Captain Price was injured in a vain attempt to save the life of Glenn F. Mercer.

The Dusenberry Limestone Products Company, Melvern, Kan., is now operating a crushing plant at a new location near Havana, Kan. Products include crushed rock and agricultural lime. Earl Swanson is superintendent.

Miner Retires as Lobaugh Heads Universal Atlas Division

Two recent changes in the personnel of the Universal Atlas Cement Company's Lumnite Division have been announced by the firm's officials. Joshua L. Miner has retired as vice-president of the division after 25 years of association with the company and 10 years as vice-president. Appointed manager of the Lumnite Division, effective December 1, is Frank E. Lobaugh, who has been technical service director of the division for the last three years.

Mr. Miner has spent his entire business life in the cement industry. He has been a member of Committee C-1 of the American Society for Testing Materials for more than 30 years and has also served on the executive committee of that organization. During World War II he was chairman of the technical advisory committee of the cement, lime and gypsum division of the War Production Board. Mr. Miner has been largely responsible for the development of calcium-aluminate cement in the United States.

Mr. Lobaugh was from 1930 to 1940 assistant professor in ceramic engineering at Alfred University. He joined the Lumnite Division in 1941 and was appointed technical service director in 1944.

• Left: Joshua L. Miner, former vice-president of the Universal Atlas Cement Company's Lumnite Division.

• Right: Frank E. Lobaugh, former technical service director for Universal Atlas, who succeeded Mr. Miner.

Big Conveyor System to Haul Aggregate 650 T.P.H. To Site of Bull Shoals Dam

The seven-mile belt conveyor system which will haul raw materials for building the $58,000,000 Bull Shoals Dam on the White River in Arkansas, 100 miles north of Little Rock, will be supplied by Goodyear Tire & Rubber Company's mechanical goods division.

A multi-purpose project, the Bull Shoals Dam was authorized by government engineers to provide power, flood control and irrigation facilities. Concrete placing is due to start in mid-summer, and will require nearly three years to finish. The Flippin Material Company is producing and handling the material.

In addition to the main haul system, 14,000 feet of belt will be supplied for the pit gathering and final classification operations. Sixteen belt flights will comprise the system. Thirty-inch-wide belts will be used for hauling a grand total of 4,000,000 tons of crushed stone and sand to the damsite. The system will be geared to move 525 feet a minute, delivering 650 tons aggregate per hour.

Material Service Corp. Expands Employees' Pension Fund

Colonel Henry Crown, chairman of the board of the Hilton Hotels Corp. and of the Material Service Corp., Chicago, recently announced that Material Service has added approximately $100,000.00 as the yearly contribution to its salaried employees' pension fund for 1947.

This combined profit-sharing and pension plan, started January 1, 1945, is unique in that the maximum allowable 15 percent of employee's annual salary is contributed in its entirety by the corporation and no part thereof is made up by the employee himself. According to Col. Crown, 5 percent of the company's profits are contributed to the plan up to the above 15 percent limit and for the past three years has reached that limit. These funds are, of course, tax free.

Every salaried employee of two years' standing is eligible for the plan and his share of the fund is available in its entirety should he leave the company after 8 years of service. Special arrangements permit drawing on his share if he remains with the company.

Five trustees are elected each year to represent the employees and company officials in administering the plan. They are: Miss Julia Cummings; Arthur H. O'Connor, sales manager; George W. Lenzie, vice-president and general superintendent; Irving Crown, vice-president and secretary; Henry Crown, chairman of the board.

New Cold Mix Plant Installed By Pacific Coast Aggregates

A product named "Amalga-Pave" is being marketed by the Amalga-Pave Asphalt Company of Fresno, Calif. Processing is done at the new cold-mix asphalt facilities installed at the Fair Oaks plant of Pacific Coast Aggregates, Inc., of San Francisco.

The basic ingredient of the new mixture is B.G.S. flux oil, a by-product of the solvent extraction process in refining lubricating oil. It is said to have the tendency to displace moisture on the aggregate particles. After being mixed, it can be stored for a considerable time, as the moisture does not amalgamate or set-up until it is rolled or compacted.

O. K. Stewart and H. L. Allen have been named operators of the N. C. Carroll & Sons gravel plant, Pratt, Kan., by Mr. and Mrs. N. C. Carroll, owners. Mr. Stewart will act as manager, and Mr. Allen is production superintendent. In charge of the firm's plant at Wakeeney is the Carrolls' son, Gale, while another son, Lee, manages a third plant in eastern Kansas.

Canadian Firm to Produce Cement, Sulphur Dioxide At New Brunswick Plant

An announcement of the formation of the Atlantic Chemicals Co., Ltd., states that the firm will develop plans for an industrial plant to be located on the Petitcodiac River near Moncton, N. B.

The process to be used involves the use of local anhydrite ($CaSO_4$) and shale to produce simultaneously portland cement and sulphur dioxide. It has been successfully employed in Europe. The portland cement plant envisaged will be a single-kiln plant of approximately 1,200-barrel-per-day capacity, with ancillary quarries, crushing and grinding plants and facilities for storage and shipment.

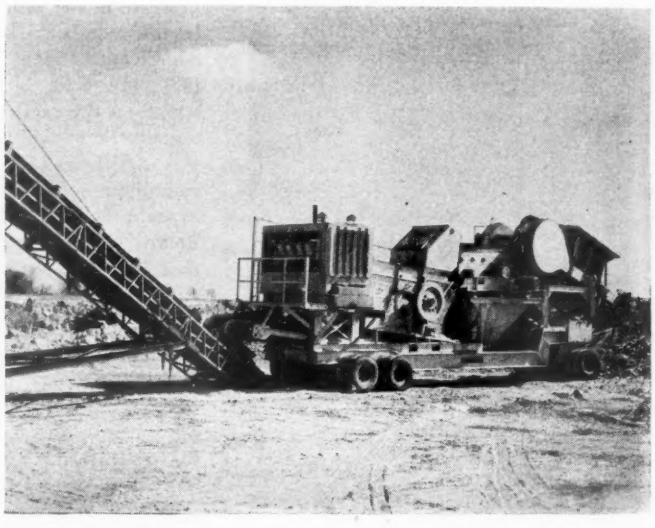
Gases evolved from the kiln, containing about 6 percent sulphur dioxide, will be cleaned and converted to sulphuric acid in a plant having a capacity of 150 tons per day (100 percent). Nearly all of the acid will be used at the adjacent superphosphate plant. This unit will comprise storage buildings for phosphate rock and finished superphosphate, as well as rock grinding and acidulating equipment.

Plant facilities will include maintenance shops, an office and a laboratory, railway sidings and roads, a yard locomotive and cars and a power plant.

Officers of the new company include the following: F. W. Pirie, Grand Falls, N. B., president; A. A. Scales, Charlottetown, P. E. I., vice-president; H. J. Rowley, Fredericton, N. B., secretary-treasurer; and S. R. Frost, Moncton, N. B., manager and engineering director.

Officials of the Sulphur Springs Gypsum Co. of Wyoming announced that additions will be made to the company plant at the gypsum mine near Thermopolis, Wyo., and that plans are being made to ship four carloads of gypsum daily to Washington, Idaho, Montana, Utah, Oregon and Nebraska. H. J. Adams, retiring president, reported that demand for the company's product has increased so rapidly that machinery is inadequate to handle the tonnage.

• Below, left: At the crushing plant of the Porter Brothers, located at Roscoe, Ill., a "Caterpillar" diesel D8800 electric set furnish power for the conveyors which take the material to loading bins and stockpiles. Right: The portable limestone crushing plant, which is powered by a "Caterpillar" diesel D17000 engine.



N.C.S. Assn. Issues Data On 1946 Safety Contest—Announces Winning Plant

The injury-severity rate at quarries and mines in the 1946 National Crushed Stone Association Safety Competition was the fourth lowest in the 21-year history of the annual contests conducted by the U. S. Bureau of Mines. The 54 crushed stone operations in the competition—46 open quarries and 8 underground mines—had a severity rate of 3.359 days lost per 1,000 man-hours of work, which was well below the 21-year average rate of 5,682. However, the severity in 1946 was more than triple the corresponding rate of 1.093 in 1945, the lowest on record. Injuries occurred at a rate of 27.692 per 1,000,000 man-hours, a more favorable rate than the 1926-46 average, but less favorable than the 1945 rate. Accident-free records were achieved in 1946 by 12 plants—11 quarries and 1 underground mine—which were operated a total of 847,990 man-hours.

The 54 competing plants in the 1946 competition were worked 8,630,738 man-hours, the largest annual total worktime in any contest year except in 1929. There were 3 fatalities and 8 permanent partial disabilities charged respectively with totals of 18,000 and 5,816 days lost in accordance with the standard time-loss scale. The 228 temporary lost-time injuries had an average of 23 days disability per injury. All told, 28,991 days were lost through injuries at the enrolled plants, an economic loss of production equivalent approximately to 100 men working 290 full shifts.

Although the 1946 safety record of the 46 open quarries in the contest receded from 1945, the injury-severity rate was less than half the 21-year average rate and the frequency rate of injuries was moderately lower than the corresponding average rate for 1926-46. At the 8 underground mines in the 1946 competition, the severity rate was more than triple the corresponding rate in 1945 rate. Injuries occurred more frequently and were well above the 21-year average in 1946 at these underground mines and the frequency rate increased to 26.15 from 19.37 per million man-hours in 1945.

The Le Roy quarry of The General Crushed Stone Company at Le Roy, Genesee County, New York, had the best safety record in 1946, and the bronze plaque provided by the *Explosives Engineer* magazine was awarded to this operation. Employees worked 110,850 man-hours and achieved a perfect safety record without a disabling accident during the year. The 1946 trophy was the first awarded to the Le Roy quarry, which has been enrolled each year since the contests began in 1926. However, this operation has had injury-free records in 5 other of the past 21 years and was awarded a Certificate of Honorable Mention for these accomplishments in 1934, 1936, 1938, 1940, and 1943. During the 21 years this quarry was in operation a total of 2,641,436 man-hours with an injury-frequency rate of 29.908 per 1,000,000 man-hours and an injury-severity rate of 0.655 per 1,000 man-hours of exposure to plant hazards.

The following received honorable mention and were awarded parchment reproductions of the quarry scene on the bronze trophy plaque for operating throughout the year without a disabling injury:

Ohio dolomite quarry, The J. E. Baker Company, Millerville, O.; 110,155 man-hours.

Inwood limestone quarry, The J. E. Baker Company, Inwood, W. Va.; 86,978 man-hours.

Bakerton limestone mine, The Standard Lime and Stone Company, Bakerton, W. Va.; 81,319 man-hours.

Blue Mount trap-rock quarry, the J. E. Baker Company, Blue Mount, Md.; 79,055 man-hours.

Marquette limestone quarry, Marquette Cement Manufacturing Company, Cape Girardeau, Mo.; 70,098 man-hours.

Winchester trap-rock quarry, The General Crushed Stone Company, Winchester, Mass.; 69,354 man-hours.

Union Furnace limestone quarry, Warner Company, Tyrone, Pa.; 57,822 man-hours.

Plainville No. 4 trap-rock quarry, The New Haven Trap Rock Company, Plainville, Conn.; 57,690 man-hours.

Middlefield No. 1 trap-rock quarry, The New Haven Trap Rock Company, Middlefield, Conn.; 49,822 man-hours.

No. 4 trap-rock quarry, Southwest Stone Company, Knippa, Tex.; 46,497 man-hours.

Millerdale limestone quarry, Waterloo Dredging Company, Waterloo, Ia.; 28,350 man-hours.

Fifty-two percent of the accidents at the 54 crushed stone plants resulted from handling materials or objects, falls of persons, and haulage. Hand tools, falling objects, and machinery were the succeeding most frequent causes of disabling injuries. Falls and slides of rock, falls of persons, and haulage accounted for 82 percent of the days of disability.

National Gypsum Company Reports Increasing Output As Result of Expansion

The major impact of the increased production, resulting from National Gypsum Company's $30,000,000 expansion program, formulated three and one-half years ago, "will be felt during 1948 and successive years," according to President Melvin H. Baker. A part of the increase was apparent during 1947.

"The company expects a 25 percent production increase in 1948," Mr. Baker said.

"The company's products continue to be priced about 20 percent above 1940, as against an increase of 90 percent by labor in the company. The actual profit per dollar sale is considerably less than in 1940."

Dow Magnesium Equipment Sold as War Surplus Material

Approximately 8,000 gross tons of miscellaneous salvage material from the war surplus Dow Magnesium Corp. plant at Marysville, Mich., have been approved for sale to E. Lenick & Co., Saginaw, Mich., for $300,267.

Included in the sale are 215 magnesium cell pots and furnaces, valves, connecting pipes and miscellaneous fittings, 12 HCL towers, conveyors, a salvage pile measuring about 5 by 40 by 15 feet, 760,000 pounds of copper bus bars ranging in length from 3½ to 9½ feet.

WAA said the sale was particularly desirable because it will place the buildings in condition for sale or lease.

The U. S. Engineers at Rock Island, Ill., are using Phil Mackey, young marine diver, in raising a sunken derrick boat of the Builders Sand & Gravel Co., Davenport, Ia. The boat sank in 10 feet of water near Bettendorf, Ia., after striking floating ice, which caused a leak.

• A scene at the E. C. Burleson crushed rock and agricultural limestone plant near Asheville, N. C. The primary unit is a Pioneer PRL-2036 with a 133-hp. 4-cylinder General Motors diesel driving the 36- by 20-in. jaw crusher. A Pioneer 1405 secondary plant takes its power from a 200-hp. 6-cylinder General Motors diesel engine.

Thirty Years Ago in Pit and Quarry

By WALTER E. TRAUFFER

AS announced on the editorial page of this issue, this is the first of a series of articles about what was published in PIT & QUARRY 30 years ago. This series is being published because of our belief that the "oldtimers" will be glad to reminisce about the good old days and the later generations will want to compare conditions then with those of the present.

The writer was surprised, in studying some of these old issues for the first time in some years, to note the many things which have stood the test of time, both in the industry and in PIT & QUARRY, and remain basically unchanged. In the field this does not imply any lack of progress but merely that many basic problems remain practically the same throughout the years; also that the logical solutions for many of these problems had already been found and can only be improved in minor details. As for the content of PIT & QUARRY, this basic similarity is due to the fact that then, as now, every effort was made to supply our readers with the latest news, personals, new machinery and plant descriptions, technical and operating articles, etc. The field covered—all the nonmetallic minerals industries with the exception of coal, oil and building clay—remains unchanged. For example, the January, 1918, issue reviewed in this article contained information of interest to producers of cement, lime, sand and gravel, crushed stone and other materials.

January, 1918—This war-time issue was dedicated to industrial progress in the nonmetallic minerals industries. One of the feature articles was on "Safeguarding Quarries", by A. J. Croll, then general superintendent of the Atlas Portland Cement Co. This article was presented to our readers through the courtesy of the National Safety Council. Then, as now, the quarry was considered to be one of the most hazardous departments of our industries.

Another feature was "Cost Keeping for Quarries", which gave practical suggestions equally applicable to other nonmetallic minerals operations. Many producers could profit by reading this article now.

The progress in transportation methods was emphasized by a staff-written article entitled "Motor Trucks Haul Material at One-Third the Cost of Teams". Examples were given which showed that a 1-horse team with a 2-cu. yd. wagon and driver could be obtained for $8 per day. A 5-cu. yd. truck and driver cost $25 per day. On a 6-mile round-trip haul the team hauled 6 cu. yd. per day at a cost of $1.33 per cu. yd.; the truck hauled 55 cu. yd. at a cost of $.45 per cu. yd.

Association activities were described in a special section, and coming meetings were listed. Among those listed were the Indiana Crushed Stone Assn.; the Columbus Building Show; The Sand-Lime Brick Assn.; the National Assn. of Sand and Gravel Producers, with E. Guy Sutton, for many years vice-president and secretary of the Neal Gravel Co., Mattoon, Ill., as secretary; and the American Concrete Institute.

In this issue were several descriptive articles on plants. One plant, that of the Dunbar Stone Co., Detroit, was electrically operated throughout, had an automatic sprinkler system for fire protection, filtered oil for re-use, railroad and truck scales and other "modern" features.

Another article described the dredge and plant of the Northern Gravel Co., Muscatine, Ia., which is still doing business at the same location. This 1200-cu.-yd.-per-day operation—then called big, and not small even by present standard—had a 10-in. hydraulic dredge and floating pipeline. A bucket elevator took the material from a sump to the screens; oversize from the screens was crushed.

Other shorter articles in this issue were devoted to the shortage of railroad cars and the use of trucks wherever possible (as a patriotic measure), air compressors and their uses, and the third annual apportionment of federal funds for road building (Federal Aid).

The department entitled "Men and Machinery" told of carbide lights, dump cars, belt conveyors, cableway excavators, dredge pumps, car dumpers, oil engines, gasoline locomotives, crawler and four-wheel-drive trucks, etc.

Fuel-Saving Tips Offered By U. S. Bureau of Mines

With local fuel shortages likely to develop in some sections this winter, substantial fuel savings can be made by small commercial plants, apartments, theaters, hotels and office buildings through the adoption of fuel conservation measures which proved successful during the war, according to James Boyd, Director of the U. S. Bureau of Mines.

Individual plants reported savings of coal, oil and natural gas up to as much as 60 percent of their annual consumption, Director Boyd said. By following certain definite steps which were beneficial to plants participating in the wartime National Fuel Efficiency Program, similar savings can be made now, he added.

The nationwide World War II program conducted by the Bureau of Mines in cooperation with industrial and commercial fuel users led to a saving of all fuels equivalent to more than 5,000,000 tons of coal per year. Had it continued toward the original goal, an annual savings of fuels equivalent to 29,000,000 tons of coal would have been attained, Director Boyd stated. The national program ended with the conclusion of hostilities.

Valuable information used in this practical wartime experience in fuel savings has been compiled recently by the Bureau of Mines in a 169-page handbook.

A copy of this handbook, Bulletin 466, *A Guide for Reducing Fuel Consumption in Commercial Plants,* may be obtained *only* from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for 50 cents. It is *not* for sale by the Bureau of Mines.

New McCrady-Rodgers Boat Tows Loads on Three Rivers

A new sand-and-gravel towboat on the Ohio, Monongahela and Allegheny rivers, which converge at Pittsburgh, is the *W. F. McCrady,* owned by the McCrady-Rodgers Company. The craft, built at the yards of the St. Louis Shipbuilding & Steel Company, is of all-welded-steel contruction, 78 feet long, 24 feet wide and 8 feet in hull depth.

This boat was built according to the designs of W. F. McCrady, company president, and Ralph Bagley, superintendent of equipment. Among the outstanding features of the craft are a pair of hull tanks, one holding 10,000 gallons of fuel oil, the other, 1,500 gallons of fresh water. The propulsion engines, twin 270-hp. jobs, are from the National-Superior Company.

• The "W. F. McCrady," new sand-and-gravel towboat of the McCrady-Rodgers Co., Pittsburgh, Pennsylvania.

The Legislative Picture in 1947 and Prospects for 1948

THERE will be many state and municipal legislative and regulatory developments throughout the country during 1948 of direct and indirect concern to the pit and quarry industries, a survey indicates.

Regular state legislative sessions are scheduled in California, Kentucky, Louisiana, Massachusetts, Mississippi, New Jersey, New York, Rhode Island, South Carolina and Virginia, starting in January in all instances except Louisiana, which convenes in May. A recessed session of the 1947 Missouri legislature also convened in January.

By BETHUNE JONES

While this may appear to indicate an "off-year", as compared with the heavy biennial sessions in the odd-numbered years, special sessions are expected to be called in many other states and in virtually all states interim committee and special study groups will be at work on major measures. Also, many controversial proposals already are slated for submission to the voters at next fall's election, with others certain to be added. Important rulings also may be expected from state courts and administrative agencies.

Besides prospects of significant developments in state capitals, there also will be plenty of action in city halls, with important problems awaiting solution in many key municipalities.

Steps toward expansion of public construction will be major issues at both state and local levels during the year. Administrator Philip B. Fleming of the Federal Works Agency estimates that needed new state and local public construction, including highways and buildings, approximates $75,000,000,000. If spread over a 15-year period, this would average $5,000,000,000 a year, or about two and one-half times the 1947 rate of state-local construction.

While it will, of course, take time to get public construction up to the level needed to make up the deficit accrued during depression and war years, significant progress toward that goal may be expected during 1948. Long-range highway and other construction programs are being mapped in many states and cities, and this planning will form the basis for action in the years ahead.

Higher taxes will accompany the anticipated vast expansion in state and local public construction. As a forerunner of what may be expected in highway financing alone, increased gasoline taxes were enacted during 1947 in eight states—California, Colorado, Connecticut, Maine, Maryland, Nevada, Rhode Island and Vermont; passed but vetoed in Michigan, and unsuccessfully proposed in at least 25 other states. Other types of highway-user taxes also were upped in a number of states during 1947. Increased taxes to finance expanded highway construction are currently under consideration in several states.

A bright side of the highway financing picture, however, is the progress of the trend against diversion of automotive tax revenues to nonhighway purposes, a practice which in past years has removed huge sums from highway construction. Ohio recently adopted a state constitutional amendment outlawing highway fund diversion, thus becoming the 20th state to take such action. Similar amendments already are scheduled for submission to the voters of Massachusetts and Tennessee at the 1948 general election, and the issue may also be put on the ballots of other states.

The public works issue is only one of several major pressures for new revenues in state capitals, where inflated costs are being felt as elsewhere. State governments also face mounting demands for expanded public payrolls, more state aid for education, housing subsidies, bonus and other aids for veterans, liberalized social welfare programs increased financial assistance to municipalities, and other purposes.

State taxes of various types were increased in 1947 by at least 26 states and proposals for new or higher levies flooded virtually all of the 47 state legislatures which convened in regular or special session. While this trend will be slowed during 1948, because fewer lawmills will meet and because of the effort to keep things quiet in the important election year, indications point to a virtually certain boost in the general level of state taxes in the years immediately ahead.

Tax increases at the local as well as state levels are in prospect. Proposals for broader local taxing authority and increased local sharing in the receipts of state collected taxes (which has the effect of either raising state taxes or keeping them at a higher level than would otherwise be needed) were enacted during 1947 legislative sessions. Indications are that this trend will broaden and that new local nonproperty taxes, as well as property taxes increases, will appear where authority for their enactment already exists.

State legislatures will continue their varied attempts to foster new housing construction, with emphasis on providing new low-rental facilities. Along with such presumably emergency steps as the granting of housing subsidies and other action putting the states themselves deeper into the housing business, there will be further legislation designed to encourage private capital to expand its long-range participation in slum clearance and urban redevelopment. The latter includes measures providing aid in assembling land, offering tax freezes, and lifting restrictions on insurance company investments.

A number of states already have rent control laws ready to take effect when federal control expires, and more similar laws may be expected if federal legislation is not extended. Municipal rent controls laws were enacted in 1947 by at least four major cities—New York, Chicago, Philadelphia and Buffalo, and others are considering such action.

Additional states are considering plans to contribute to building code modernization through the adoption and promotion of basic state codes. Meanwhile, building code revision has been progressing in many major cities during the past year. The movement is expected to accelerate when the Building Officials Conference of America makes available a model building code which it has been developing.

Bills providing for lower unemployment compensation tax contributions by employers were enacted in 1947 by at least 15 states. This trend, accompanied by liberalization of benefits, is expected to continue further if employment continues at a high level. There already are indications, however, that lax administration and broadening of benefits may force tax increases in some states.

In a trend progressing steadily in recent years and expected to continue, at least 25 states in 1947 liberalized workmen's compensation laws in various respects, such as increased benefit payments, enactment of new occupational disease laws, and establishment of second injury funds.

Bills proposing state wage-hour laws modeled after the federal fair

(Continued on page 70)

Production at New Facilities of Mexican Plant Now 1200 Bbl. per Day

By E. J. Ryan
Manager Cementos de Chihuahua, S. A.

another P and Q exclusive

THE new portland cement plant of Cementos de Chihuahua, S.A., resulted from the reorganization of the company of the same name which constructed (in 1941) and operated for two years the little "Baling-Wire Cement Plant" described in the September, 1943, issue of PIT AND QUARRY. The reorganization was effected in April, 1945, among the three owners of the original small plant, the Marquette Cement Manufacturing Co., and new Chihuahua stockholders.

Immediately after the reorganization details were completed, Marquette undertook the design of the new plant, and actual construction work was initiated on October 12, 1945. At that time it was expected that the new plant would be ready for production by the following June, but the world's generally chaotic conditions so delayed delivery of machinery and equipment that the kiln was not lighted until February 28, 1947—nine months behind schedule. However, within 24 hours after the usual small ceremony generally attendant upon starting a new kiln, Cementos de Chihuahua, S. A., delivered to the local market 50 metric tons of Portland cement that far exceeded, as was proven subsequently, the corresponding requirements set forth by the A. S. T. M. From that first day to the present the plant has been operating continuously, and currently is producing 200 metric tons, or approximately 1,200 barrels, of high-quality portland cement per working day.

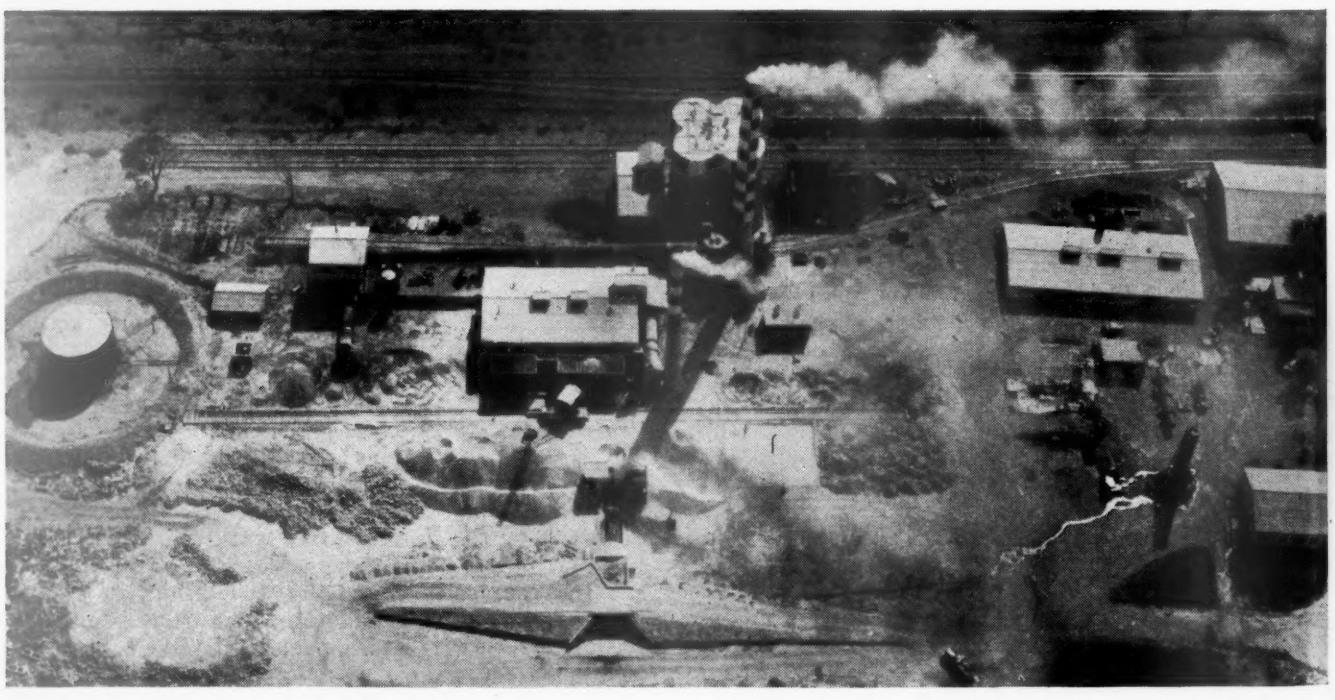
In designing the plant, Marquette's engineers stressed two desired points: simplicity and compactness—major factors in the surprisingly low-cost and efficient operation of such a relatively small cement mill. An additional purpose and result of designing for compact simplicity was the reduction of capital investment to what may be something of a record minimum.

Marquette's design basically embodies a broad "U" formed by the dryer, kiln and cooler—with the kiln forming the bottom of the "U" and the dryer and cooler forming the sides. The mill building, which houses both raw and clinker mills, is located within the "U". This basic feature of design is readily discernible in the accompanying aerial photograph.

Limestone and clay are purchased from an affiliated company, Piedra y Arena, S. A., whose stone quarry is located 1.5 kilometers from the plant at the base of a limestone hill measuring approximately 1,500 meters long, 220 meters high, and 1,000 meters broad. Rock currently is being broken by jackhammers operated from the steep hillside. Air is supplied by an electrically-driven Sullivan compressor. Blasted muck falls to the quarry floor.

It is transported by a scraper hoe, operated by a Sullivan electric, 25-hp, three-drum scraper hoist employing two tail-ropes and one pull-rope. The scraper hoe pulls its load onto a grizzly covering a semi-circular concrete bin. Rock is discharged from the bin into International 5-ton dump trucks through an air-operated finger chute-gate. The air cylinder of the finger gate is controlled by means of a 3-way valve situated so that it can be manipulated by the truck drivers from the truck cabs.

The clay is the erosion product of rhyolitic flows that once covered the limestone. (Remnants of this rhyolite capping are still in place on the top of the limestone hill.) The eroded rhyolite forms the valley floor upon which the plant is situated.



• An aerial view of the facilities of Cementos de Chihuahua, S. A., showing the original plant (right center), which has been converted into offices, a laboratory, a warehouse and a machine shop.

In order to avoid excavations in the plant yard, a 4-hectare (about 10 acres) block of land just north of, and adjacent to, the plant was purchased as a clay-pit site.

Clay-pit excavation is accomplished by means of a scraper hoe and a 3-drum hoist, identical to the stone quarry equipment. On the top side of the clay-pit hoe, however, are welded steel teeth. Whenever the clay is found to be too hard for easy cutting by the hoe blade, the hoe is turned over, and the ground loosened by plowing back and forth several times with the teeth. The clay is scraped up a grizzly ramp and discharged into a hopper. Trucks pass under the hopper along a sunken roadway, and load directly from the hopper.

The stone quarry is operated five days, and the clay-pit one day, per week. The same labor and the same trucks are used for both operations.

The International trucks climb a ramp to deliver limestone and clay directly into a Gates gyratory crusher, which discharges onto an inclined belt conveyor feeding a Williams hammer-mill.

An automatic sampler cuts the hammer-mill discharge as it falls vertically onto a high-speed kicker belt which throws the crushed material to the center of a concrete pit.

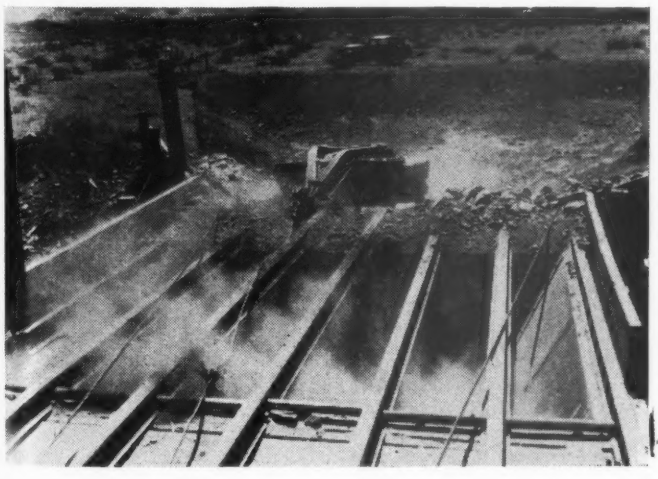
Crushed limestone or clay (or gypsum) is removed from the pit by the clamshell of a railway electric crane operated by direct current through a subway-type third rail. The crushed materials are stockpiled as they are removed from the hammer-mill discharge pit.

A 3-component mix is currently used, the third ingredient being an iron concentrate obtained as a waste by-product from one of the local lead-zinc-silver flotation concentrating mills. The iron concentrate is purchased from the mining company on the basis of iron content per ton, and is delivered, ground to about 85 percent minus 65 mesh, in ordinary dump trucks, and is stockpiled by the crane.

The three steel, open-top raw bins are filled, as needed, by the crane. Reciprocating feeders under each bin—with a common drive mechanism to insure uniformity of proportioning—drop the required amounts of each of the three components onto a common horizontal belt conveyor which discharges into a vertical chain bucket elevator feeding the 7- by 50-ft. oil-fired dryer, whose draft is induced by a 100-ft. concrete stack. A duplicate elevator lifts the dryer discharge to a small gyratory crusher located directly over the steel feed bin of the Morse Brothers primary raw ball mill. The ball mill intake is controlled by a Syntron feeder. The mill discharge passes through an integrally-connected plant-made tubular conveyor into a Nordberg 6- by 22-ft. tube mill. Draft through both mills is provided by a fan at the discharge end of the Nordberg mill.

The finely-ground raw mix passes directly from the tube mill to a Fuller-Kinyon pump and is transported through a 6-in. pipe line to two of the four 25- by 85-ft. concrete silos. These four silos were poured as an integral unit, so that a horizontal section is seen as four tangential circles with a curve-sided, diamond-shaped area in the center. This central interstitial space is utilized as an additional silo for cement storage. The two silos adjacent to the kiln are used for the raw mix; the three other silos are for cement storage.

The raw Fuller-Kinyon lines are so arranged that the mix may be pumped to the top of either raw silo, or to both simultaneously. Splash plates in each silo under the fill pipes tend to distribute incoming raw mix more or less evenly. Another Fuller-Kinyon pump is located directly beneath the north silo (farthest from the firing end of the kiln). An enclosed screw conveyor connects the bottom of the south silo with the north silo's pump, so that raw mix can be circulated by



• The limestone quarry of Piedra y Arena, S. A., an affiliate company, supplies rock for Cementos de Chihuahua operations. The quarry is at the foot of a limestone hill rising 220 meters above the terrain; it measures 1,500 meters in length and 1,000 meters across. The hill is about 1.5 kilometers from the plant. Quarry operations are carried on five days a week.

• Left: The scraper hoe starting on its return trip after dumping a load of clay into a truck-loading hopper. This operation is also carried on at the Piedra y Arena location. Trucks pass under the hopper on an underground road. The clay pit is worked one day each week, with the same trucks and laborers.

the pump from the bottom of either silo, or from both simultaneously, to the top of either silo, or to both simultaneously. The blending advantages resulting from this arrangement are obvious. In the circulating line from the Fuller-Kinyon pump discharge to the tops of the silos there is an electrically-operated 2-way valve which is automatically actuated in accordance with the level of the raw mix in the kiln-feed bin. As the level lowers, the valve closes the circulating line and diverts the flow of circulating material into another 6-in. pipe leading to the top of the kiln-feed bin. As this bin fills, the valve automatically re-opens the circulating line, and closes the line leading to the bin.

From the kiln-feed bin the raw mix drops vertically through a "constant head" bin to a feeder controlled from the kiln-firing floor by a "microflex" system.

The kiln's steel, refractory-lined dust chamber is fitted with a conical bottom. The 150-ft. concrete kiln stack also is provided with a conical bottom. Raw mix from the feeder described above is transported by a screw conveyor to a vertical elevator which feeds the kiln through an inclined cast iron pipe. The centers of the dust chamber, stack, feeder and conveyor are all in the same plane, permitting the conical bottoms of the dust chamber and of the stack to be bolted directly to the conveyor housing. Thus, dust from the chamber and from the stack is mixed back with the feed continuously and uniformly.

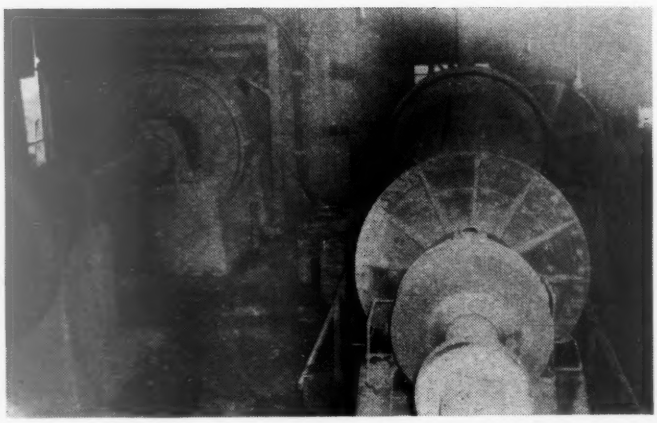
The kiln is of a uniform 8-ft. diameter. Length is 200 feet, with three cradle-type supports. The kiln is operated through the usual gear train by a 75-hp. motor whose speed is controlled from the firing floor. Standard United States practice was followed in lining the kiln.

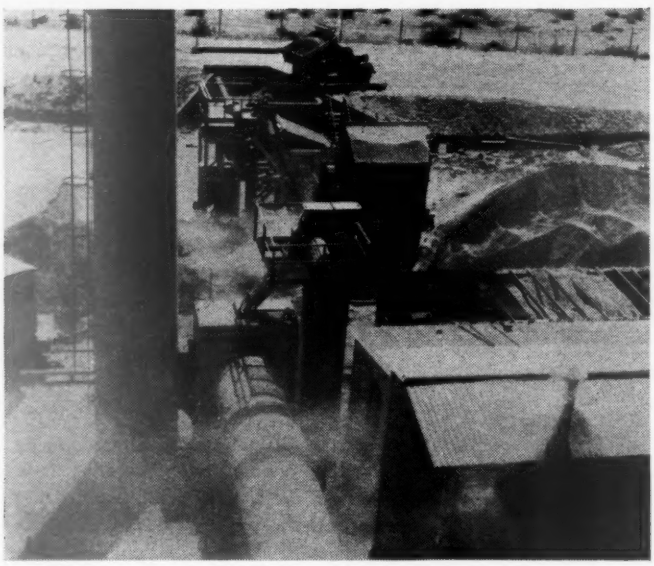
Seventy percent alumina LaClede-Christy brick is used in the hot zone of this kiln, and locally obtained refractory material in the remainder. It is interesting to note that this kiln is made up of old shells taken from the Des Moines, Ia., plant of the Marquette company. United Iron Works, Pittsburg, Kan., fabricated the tires, trunnions, and gears for the rebuilt kiln.

Fuel oil currently is approximately one-half 18-deg. Baumé obtained from the United States, and one-half 12- to 14-deg. Baumé obtained from Mexico's Tampico fields. Oil is preheated with steam from a vertical 30-hp. boiler, and is burned with a Staples and Pfeiffer burner in conjunction with an Ingersoll-Rand 40-hp. blower. A stand-by blower was obtained from one of the local mining companies, and is driven by a 75-hp. G. E. motor.

The cooler and dryer are duplicate units, with interchangeable parts. Clinker is discharged into a concrete pit identical to the one used for the hammer-mill discharge. The same railway crane removes the clinker from the pit to the stockpile.

Gypsum and clinker bins are duplicates of those used for raw components, and are similarly filled by the crane. Reciprocating feeders—duplicates of those used for proportioning the raw mix, and using a similar, common drive — proportion clinker and gypsum onto an inclined

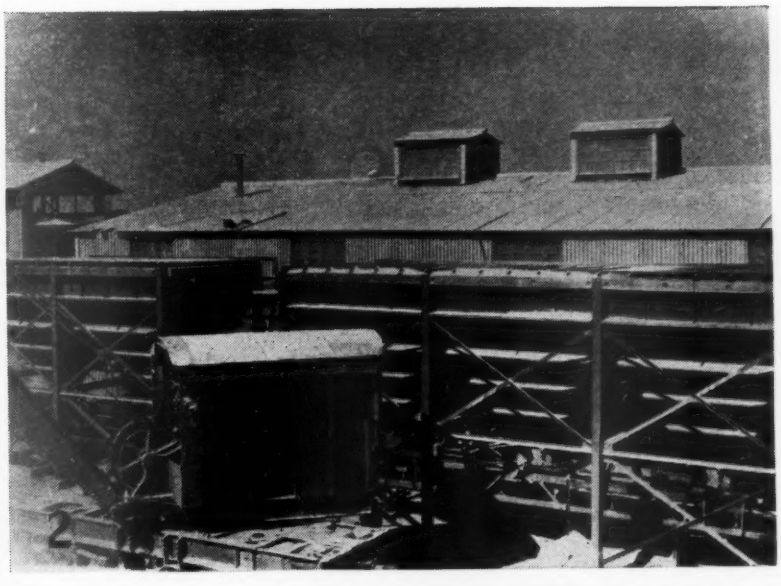


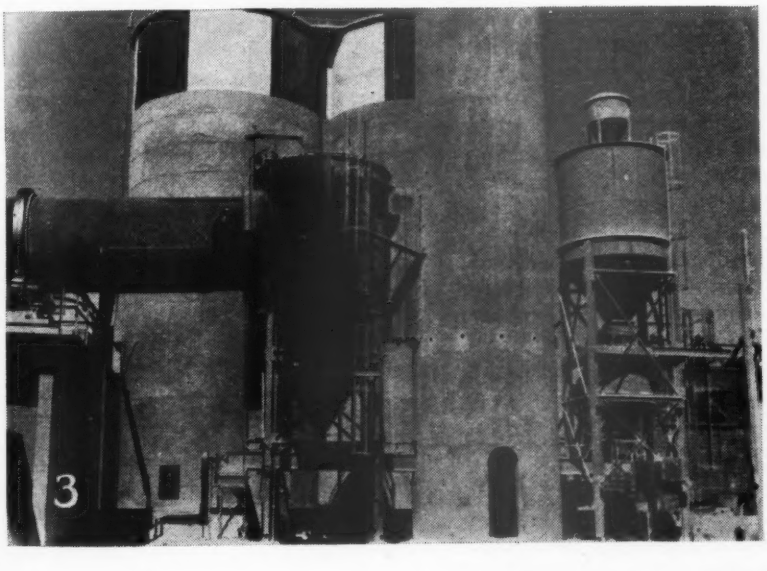


• Left to right: the dryer stack, dryer, dryer feed elevator and raw mix bins.

• Left: The clinker tube mill and the tubular conveyor from the clinker ball mill are shown in the right foreground; at the left are the raw mill hopper (background), another tubular conveyor and tube mill.

• Below: Operators filling sacks of cement at the 3-tube packer.



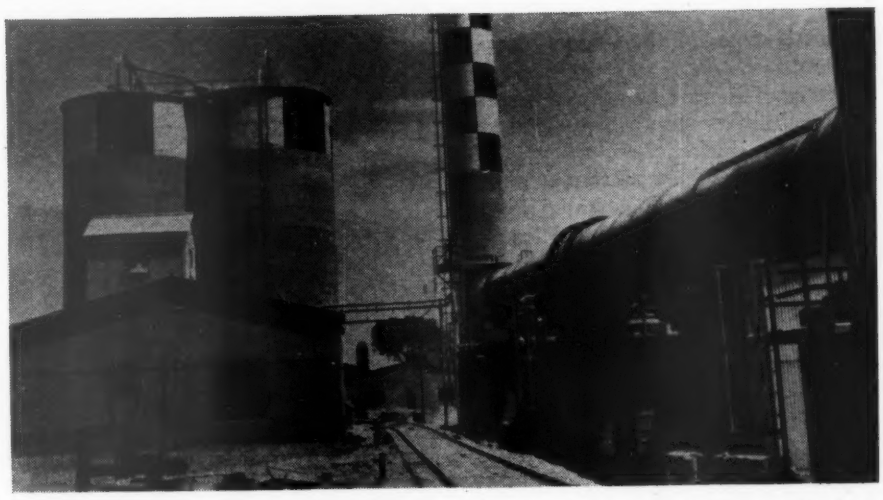


1. Raw material is brought up the ramp (background), dumped into the gyratory crusher and conveyed to the hammermill, from which it enters the pit; a clamshell removes it. Sampler at left.

2. The mill building, showing the clinker and gypsum bins (left) and the stone, clay and iron concentrate bins (right).

3. A closeup of silos and bins. At the right are the kiln feed bin, the "constant level" bin, and the feeder. Below is the horizontal screen conveyor to the vertical elevator feeding the kiln.

4. The firing end of the kiln, showing the cooler and (in the background) the 200,000-gallon oil storage tank.



● A portion of the kiln area. At the left is the packhouse, with silos in the rear. At the right, the kiln stack and the kiln.

belt conveyor which discharges through a Syntron feeder into the primary clinker ball mill. The clinker ball mill discharge is conveyed directly to a second Nordberg 6- by 22-ft. tube mill, which produces the finished cement. These clinker mills are duplicates of the raw mills and have interchangeable parts. They are equipped with ribbed steel plate liners, and are driven by a V-belt drive, utilizing Nordberg sheaves, from a 300-hp. Crocker-Wheeler motor. The finished cement passes directly through a Fuller-Kinyon pump and a 6-in. pipe-line to the cement silos. Cement can be pumped to any one, or any pair, or to all three of the cement silos.

The three cement silos discharge, individually or simultaneously or in couples, through screw conveyors to a vertical elevator which discharges into the hopper for a 3-tube St. Regis packer. A by-pass arrangement allows cement to be drawn from this hopper into bulk-cement trucks without interfering with packing operations. Tracks on the east and west sides of the pack-house floor facilitate car loading, while trucks are loaded through a roller-type door on the south side of the building.

Gypsum is purchased from several deposits located variously from 50 to 70 kilometers from the plant. Delivery is made in flat-bottom railway gondolas, from which it is transferred to the gyratory crusher by a plant yard truck.

The plant currently is producing Type II portland cement for normal sales and also Type IV portland for the Mexican Federal Government's Secretariat of Hydraulic Resources. Although at present only a relatively small portion of the plant's total capacity is utilized in the production of Type IV cement, it is expected that a major percentage of the total output during 1948 will consist of this latter type for the Federal Government.

Research is now being conducted as a preliminary step in the eventual installation, during the coming year, of a unit to produce mortar cement.

Electric power is purchased from a local subsidiary of the Electric Bond and Share Company, which operates three hydro-electric and one thermo-electric plant in an interlocking system which delivers power to the Chihuahua City area over a double, 90-mile, 110,000-volt line from the "Boquilla" dam. This dam forms a lake approximately 45 miles long by a maximum width of about 15 miles. The voltage is stepped down, in a sub-station just south of the city, to 22,000 volts and is transmitted at this potential over a single-pole, 10-kilometer line to the main bank of the plant's transformers. Plant voltages are 2,200 for all motors over 50 hp., and 440 volts for smaller motors. Additional transformers furnish 110 volts for lighting circuits, which are also connected to a gasoline-engine-driven, 15 kv.-a. generator which automatically and instantaneously feeds the lighting circuits during power failures. All plant wiring, including high-voltage circuits, has been placed underground in concrete, telephone-type, conduit blocks. The absence of overhead wiring is a distinct advantage during the inevitable high winds that are experienced each spring.

While Marquette's design is a principal factor in the plant's decidedly efficient operation, it is equally certain that current results could not have been obtained without the rare zeal and loyalty of all members of the organization of Cementos de Chihuahua, S. A., including the entire board of directors: Eloy S. Vallina, president; George Moyle, general superintendent; J. M. P. Falomir, sales manager; Merril Whitehead, chief chemist; Victor Delgado, assistant to the general superintendent; John Ford, mechanical superintendent; Esteban Cano, chief accountant; Miss M. Krakauer, sales accountant and general manager's assistant; Aurelio Ramos, budget director; Hilario Granillo, plant accountant; Rafael Botello, chief of labor relations; Arturo Uranga, purchasing agent.

Also of inestimable value is the keen interest and successfully experienced, carefully considered counsel of W. A. Wecker, president of the Marquette Cement Manufacturing Co.

The Legislative Picture

(*From page 64*)

labor standards act will continue to make their perennial appearance in state legislatures, but there is no current indication of the probable enactment of any such measure. No state has yet enacted a replica of the federal wage-hour law. However, at least four—Connecticut, Massachusetts, New York and Rhode Island—now directly or indirectly extend minimum wage order coverage to men as well as women and minors. Minimum wage levels under such orders are being revised upward by a number of states.

Also continuing to be issues in state legislatures will be bills designed to prohibit racial and religious discrimination in employment. Although rejected during 1947 by at least 15 other states, such a measure was enacted by Connecticut, bringing to four the number of states which now have such laws with effective provisions for enforcement. Similar measures were enacted in New York and New Jersey in 1945, and in Massachusetts in 1946. Indiana and Wisconsin have anti-discrimination statutes without stringent penalty provisions.

Efforts to further curb state line trade barriers blocking the maximum development of highway transportation will be continued in state legislative sessions during 1948. In the past year liberalized motor vehicle size and weight regulations were enacted by at least 18 states, while motor vehicle tax reciprocity laws were enacted or extended by a number of other states.

Production to Be Resumed At Sumatran Cement Plant

Facilities of the Netherlands Indies Portland Cement Company near Padang on Sumatra's west coast have been found nearly intact, with considerable quantities of semi-processed cement on hand. This plant, the only one of its kind in the Netherlands Indies, was before World War II producing 240,000 tons per year.

It is reported that one of the rotary kiln, nearly 400 ft. long, is ready to resume production. Two others will be put into operation after three and six months, respectively. The fourth and smallest, which was heavily damaged during the war, will require extensive repairs.

Chief obstacle to early resumption of production is the lack of sufficient coal supplies. Authorities have now made foreign exchange available for the purchase of coal; and as soon as imports have arrived, normal cement production is expected to be resumed. Officials of the company anticipate a monthly output of 6,000 tons early this year.

The portland cement plant of the Nebraska Cement Company at Superior, Neb., a subsidiary of the Ideal Cement Company of Denver, Colo., reports two emergency installations. When a natural gas shortage threatened, an oil burner was added; and later, to forestall an impending oil shortage, a coal burner was set up.

As a service to consumers and to the trade, the Industrial Mineral Wool Institute has published a 24-page manual entitled, *Holding Low Temperatures with Better Insulation.* Single copies are available free of charge from the institute at 441 Lexington Avenue, New York 17, N. Y.

Record Attendance at Sand-Gravel Meeting; Dominant Tone is Confidence

32nd Convention Widely Hailed as Most Successful In History of Association

• The new officers of the National Sand and Gravel Assn., elected at the 32nd annual convention, are: Albert R. Shiely, secretary-treasurer (J. L. Shiely, St. Paul, Minn.); Thomas E. Popplewell, president (Ft. Worth Sand & Gravel Co., Fort Worth, Tex.); Harris N. Snyder, vice-president (Buffalo Slag Co., Inc., Buffalo, N. Y.).

another ON THE SPOT report

The 32nd annual convention of the National Sand and Gravel Assn., held at the Netherland Plaza Hotel, Cincinnati, Ohio, January 19 through 22, 1948, in conjunction with the 18th annual convention of the National Ready Mixed Concrete Assn., set new records in attendance, in the quality and variety of subjects discussed, and in the size and caliber of the machinery exhibit. The attendance was notable not only for its size but also for the spirit evident among the producers and the machinery men. Nowhere was there any evidence of the defeatist attitude which has been streaming from Washington in recent months. Producers were alert and interested in all subjects under discussion and the entire tone of the meeting was courageous and progressive. The leaders of the industry evidently expect good business in 1948 and succeeding years but all are mentally prepared for and physically preparing themselves for whatever may develop from any source.

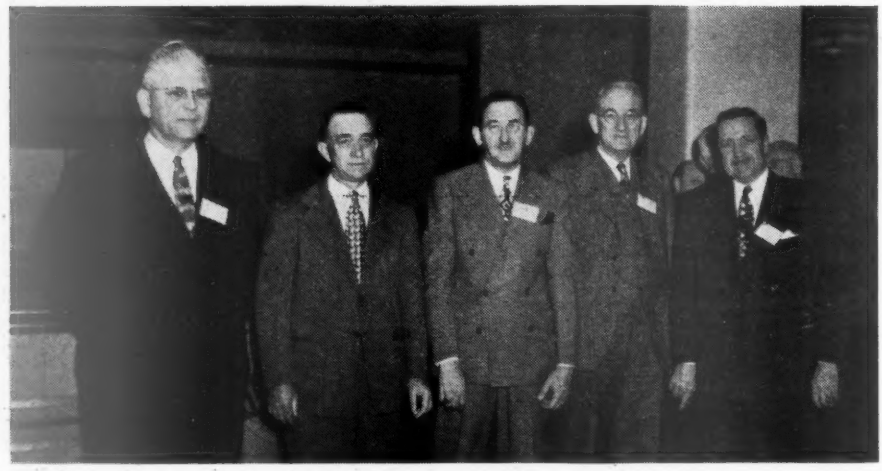
R. N. Coolidge, outgoing president of the association, sounded the keynote of the meeting when he stated in his opening address that we must never lose sight of our target, a free America with free enterprise. Our policy, he said, should include high wages based on high productiveness, good working conditions, stable employment, and a spirit of cooperation between labor and management.

The last item on the program, as usual, was the election of officers for the coming year. The association is to be congratulated on its choice of three outstanding men of the industry who have served long and faithfully as directors and in other capacities. The new officers are: T. E. Popplewell, president; H. N. Snyder, vice-president; A. R. Shiely, secretary-treasurer. The Manufacturers' Division is also to be congratulated on its choice of A. E. Conover (Robins Conveyor Div., Hewitt Robins, Inc., Passaic, N. J.) as chairman for the coming year.

• A jovial moment in the Pit and Quarry exhibit. Mrs. Rosalie Laphen, Jack Duble and Charles Bussmann (all of the Pit and Quarry staff) enjoy a chuckle with Ralph Johnson (Simplicity Engineering Co., Durand, Mich.).

ATTENDANCE

No official attendance figures are yet available but it is estimated that nearly 1,200 were registered for the combined meetings. The still incomplete registration lists show that there were 580 producers registered —204 sand and gravel only, 243 ready mixed concrete only, and 127 who are in both businesses. There were 465 manufacturers and cement men, 45 guests, and 103 ladies. All totals are believed to be far above any previous year. Nearly every state was represented, and nearly every province in Canada, as well as Hawaii and Cuba. There were 57 separate exhibits representing nearly every type of machinery and supplies used in these industries. The fact that this was the first machinery show since 1942 undoubtedly was partly responsible for the record turnout.



• John D. Gregg (Whittier, Calif.); Frank Carroll (Consolidated Rock Products Co., Los Angeles); Paul C. Sudhoff (American Aggregates Corp., Indianapolis); Alex W. Dann (Dravo Corp., Pittsburgh); Bob Mitchell (Consolidated Rock Products Co., Los Angeles).

NEW OFFICERS

T. E. Popplewell (Ft. Worth Sand & Gravel Co., Fort Worth, Texas) was elected president of the National Sand and Gravel Association at the close of the 32nd annual convention. He had previously served as vice-president of the organization, and in advancing to the top office he succeeded Richard N. Coolidge of Nashville, Tenn. Harris N. Snyder (Buffalo Slag Co., Inc., Buffalo, N. Y.) succeeded Mr. Popplewell in the office of vice-president, and Albert R. Shiely (J. L. Shiely Co., St. Paul, Minn.) became the new secretary-treasurer.

Other members of the association's new executive committee are W. Agnew Bliss (Dravo Corp., Pittsburgh), George W. Renwick (Chicago), Eric W. Ryberg (Utah Sand & Gravel Products, Salt Lake City), and Robert H. Baker (Dixie Sand & Gravel Corp., Chattanooga, Tenn.). Five members-at-large of the board of directors were re-elected by unanimous ballot. They are Charles E. Brady (Lilesville, N. C.), Floyd C. Fuller (Portsmouth, O.), J. P. Eyre Price (Scranton, Pa.), Eric W. Ryberg (Salt Lake City) and Stephen Stepanian (Columbus, O.).

COMING MEETINGS

At the directors meetings held on January 19 further decisions were made with respect to future meetings of the two associations. The mid-year directors' meetings will be held at the Broadmoor, Colorado Springs, Colo., September 20-22, with the ready-mix meeting on the 20th and sand and gravel on the 22nd, with an open day between. The 1949 annual convention will be at the Hotel New Yorker, New York City. The 1950 combined convention and machinery exposition will be either in Cincinnati or Chicago. The 1951 convention is to be held at the Roosevelt Hotel, New Orleans, the week after the famous Mardi-Gras.

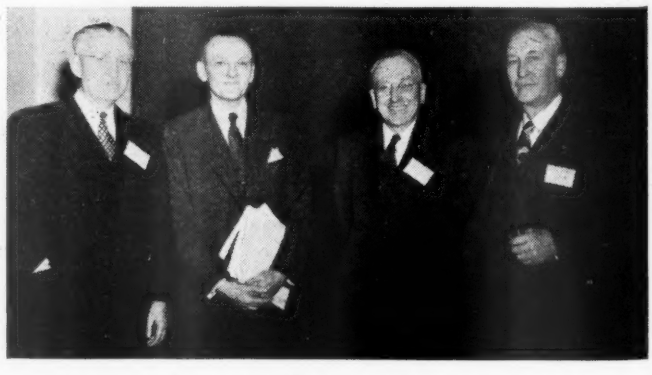
PRESIDENT'S ADDRESS

As always, the first event on the opening day of the convention was the address of the association's president, R. N. Coolidge (Cumberland River Sand Co., Nashville, Tenn.). He reported that the year 1947 was one of progress in many ways for the association and the industry. The association now has 183 active and 58 associate member companies, gains of 9½ and 14 percent, respectively, for the year. The association, he said, is in excellent financial condition and is living well within its means. He then gave a brief summary of the major accomplishments during the year of the association's staff under the guidance of the executive secretary and the engineering director.

Mr. Coolidge went on to enumerate some of the old problems with which the industry continues to be confronted and some of the newer ones which have developed. He also commented on the general problems which confront the nation, many of them brought about by economic planners who have lost sight of the fact that production alone can create wealth and prosperity. Nothing, he said, can destroy us except indifference to these problems. "We must never," said Mr. Coolidge, lose sight of our target, a free America with free enterprise, because if we have a controlled economy we have a restricted freedom in direct proportion to the number of controls."

"American employers should see that their policies encourage these ideals: 1) high wages based on high productiveness with incentive to encourage superior performance and output; (2) working conditions that safeguard the health, dignity and self respect of the employees; (3) employment that is stabilized to as great a degree as possible; and (4) a spirit of cooperation between employees and management with mutual respect for each other's rights and problems." Mr. Coolidge went on to point out that, contrary to communistic teaching that one man's gain is another man's loss, many an American enterprise has proved that it is possible to make more money, pay higher wages, and reduce costs all at one and the same time — investors, consumers and workers all gaining. In commenting

• Standing: Mrs. Mary Bugher, Mrs. Grace M. Sharp, Mrs. Catherine Van Niman; seated: Mrs. George Beall, Miss Nan Curran and Mrs. Mary J. O'Donnell. With the exception of Mrs. Sharp, who is Vince Ahearn's secretary, these capable ladies are all from the Cincinnati Convention and Visitors' Bureau.



• R. C. Collins (Warner Co., Philadelphia); Vince Ahearn (executive secretary of N.S.G.A.); Franklin K. Wills and E. S. Shoemaker (both of the Warner Company, Philadelphia).

on the year just past Mr. Coolidge said that it started out with wonderful promises and ended up with only a few of them fulfilled. Most of the members of the industry had a profitable year and yet the element of inflation distorts the figures to such an extent that it is difficult to know just how much real profit was made. The year 1947 will go down in history as one of economic confusion, said Mr. Coolidge, and leadership must rise above politics to avoid serious dislocation and disastrous inflation. Regarding the Marshall Plan, he said that we should be careful not to make long-term commitments we might not be able to fulfil. He warned that if we do adopt this plan, there will be progressively more and more controls thrown around business by the Administration. "It will be planned that way, but if we are not careful the free enterprise system of America may be the great casualty of that venture."

Speaking of labor, Mr. Coolidge said that many labor leaders are finding the Taft-Hartley Law more palatable than they pretended to think. Management, he said, is to be congratulated on the temperate manner in which it has received the law and the attacks upon it. He advised that the law be used as little as possible in settling labor disputes, but industry should stand firm in its refusal to bargain away the rights accorded by the act to workers, management and public. The most serious shortcomings of the Taft-Hartley Act, he said, lie in its failure to deal with labor and monopoly and industry-wide bargaining.

Mr. Coolidge predicted that 1948 would be another boom year, at least until mid-year. No signs of weakening for the months ahead are apparent, with wages, income, consumer spending and construction still in a rising trend. He also commented on the fact that the sand and gravel industry has had less percentage price rise than any other important industry. Some companies have had no price rise yet profits are up because of large production and good management and improved methods. Production, he said, was 10 to 15 percent over 1946, with an estimated production of about 215,000,000 tons.

REPORT OF EXECUTIVE SECRETARY

Vincent P. Ahearn, executive secretary of the association, opened his address with a brief review of important past developments. In 1946, he said, came the end of price control and priorities. With these out of the way producers began to rehabilitate plants. The plant price of sand and gravel increased only 5.5 percent from 1941 to 1946 and production was up in all categories except railroad ballast. In 1947 came the end of all construction controls, and the biggest housing year in history resulted. In that year $15,000,000 worth of construction was put in place, four-fifths of it private. This was 28 percent in value over 1946 but only 7 percent in actual volume, due to higher costs. The public works volume was $3,000,000, the highest in peacetime history.

In 1948, Mr. Ahearn said, it is estimated that sand and gravel car loadings will be up 5 percent. Because of some localized shortages and the slow increase in the number of cars available there is some possibility of a resumption of controls and this might adversely affect the industry because it is not considered very essential in some government circles. He also commented on the fact that increased freight rates would cause a further switch from rail to other forms of shipment.

Mr. Ahearn then commented on the safety contest and the fact that 74 plants were entered in the 1946 contest, 6 more than in 1945 and 19 more than in 1944. He made a plea for more entrants in the contest just starting and said that safety consciousness starts at the top. Safety, aside from its humanitarian aspects, is also good business and good public relations. A resolution was adopted to have the association enter into any zoning problems its members might encounter, and Mr. Ahearn commented that producers should watch for any nuisances or dangerous conditions from the public relations angle also.

He then made some brief comments on the standard cost accounting system the association is setting up and on the questionnaire which had been sent out to get information on wages and hours. The latter, he said, is a takeoff point on the association's program to help all members with their collective bargaining problems. Now employers can make their decisions based on facts and good advice. The standard labor contract clause is another important aid. Mr. Ahearn reiterated his disapproval of industry-wide bargaining but said that area-wide bargaining is often advisable. The industry's union agreements had, he said, been bad in many cases, as they had been based on coercion by the unions and bad information on the part of the operators. Now the producers have good information on hand and are using it. The board of directors, he said, had voted to reissue this information. He again urged producers to write the proposals instead of letting the union do it, for the psychological effect of having the other party make the objections and be in a weaker bargaining position. The association, he said, is not a counsel but will act as advisor to all members.

Mr. Ahearn called the Taft-Hartley Act revolutionary and said that he did not think it could be repealed. The unions' criticism of it

• R. K. Humphries (Pacific Coast Aggregates, Inc., San Francisco); J. W. Murphy (Union Sand & Gravel, Spokane, Wash.); R. L. Robinson (Pacific Coast Aggregates, Inc.); J. P. Eyre Price (Wyoming Sand & Stone, Scranton, Pa.); F. A. Weibel (Allentown Portland Cement Co., Catasauqua, Pa.); Ray Burns (The John T. Dyer Quarry Co., Birdsboro, Pa.).

he termed ridiculous as they fail to realize that its main purpose is to safeguard the rights of the public and of individuals against *both* employers and unions. He predicted for the year an increase in the minimum wage to about 60 cents and said that the 3 percent transportation tax may be repealed, although it yielded about $275,000,000 in revenue in the last fiscal year. Regarding commodity controls, he said that steel may be allocated soon, with oil next in line, and that gas rationing and coal allocation would logically follow. He urgently advised producers to start at once any necessary rehabilitation and building up of stock or repair parts. He said that it was even conceivable that we might again have wage and price control although congressional opinion is probably against it now. The pressure may get worse and control might start slowly and gradually build up. The Marshall Plan, said Mr. Ahearn, will surely cause shortages of basic commodities. Left alone, 1948 will give us an all-time peak of construction volume and sand and gravel production.

REPORT OF ENGINEERING DIRECTOR

In making his annual report Stanton Walker, director of engineering, said that the problems of production of sand and gravel appear to become more complicated as time goes on. "The more that is learned the more there needs to be learned. At the same time the scope of the use of sand and gravel is broader, and the bases of competition with other materials more favorable than ever before. Over the years many artificial barriers established by discriminatory specifications have been eliminated."

One of the chief problems being worked on in his department, said Mr. Walker, is the durability of concrete. Durability problems occur in all parts of the country, apparently with little regard to the climate. He urged that the industry retain its perspective with regard to such problems, as aggregates are only one of several factors importantly involved. It should not be forgotten that the vast majority of concrete is good and performs the service for which it was intended with efficiency and economy.

Because most concrete disintegration takes place in areas where freezing temperatures are encountered, said Mr. Walker, the ability of concrete to resist freezing and thawing has come to be accepted as a measure of concrete durability. For that reason the largest proportion of the laboratory work being done at the University of Maryland has been devoted to such tests. He then described in detail some of the many investigations which have been made on the variables entering into concrete. Promising results are being obtained on the effect of soft and friable particles, on the drainage of water away from the concrete in structures, on the differences of resistance to freezing and thawing of various cements, on testing procedures, etc.

Mr. Walker emphasized that air entrainment, while very helpful in most cases, is not a cure-all and does not help all aggregates, but it does make possible the use of some aggregates not ordinarily considered usable. Evidence continues to accumulate that the benefits for fine aggregates are more widely distributed than for coarse aggregates. There is also, said Mr. Walker, evidence that other principal destructive agencies such as sea water, alkali waters, etc., can be partly subdued by the use of entrained air. The effect of thermal action is also being studied. Among the more puzzling problems, he said, is alkaline reactivity, on which much more information is needed. All angles of research into this problem are being pursued.

Mr. Walker also commented that the specification barriers to the use of sand and gravel in bituminous mixtures are gradually disappearing and that the percentage being used in such mixtures is increasing. He went into some detail on the reasons for poor adhesion of bitumen to aggregates and the action in the presence of water. The type of mix has much to do with the stripping problem, open and cold mixes being the most vulnerable. Much remains to be learned, said Mr. Walker, but it seems evident that basic rocks such as limestone are generally favorable and that acid rocks, including a good share of the siliceous aggregates, are likely to be unfavorable. This suggests, he said, that the use of industry materials should be promoted for the types of mixtures where the problem of adhesion is minimized. The effect of particle shape remains important but the widespread availability and economy of sand and gravel and the greater percentage of crushed particles in it have helped to establish it more firmly for this use.

The problem of aggregate sizes affects all types of aggregates equally and the association, said Mr. Walker, is working with others to bring about better uniformity in requirements. This work continues to progress favorably under the auspices of the Division of Simplified Practice of the National Bureau of Standards. He urged that all producers approve the latest changes proposed by the Division.

Mr. Walker then described in some detail many of the production problems confronting the industry and the steps being undertaken in his department to solve them. Work is being done on deleterious particles, soft particles, sand grading, organic impurities, crushing, screening, etc. He also told of the continued cooperation with the University of Maryland, the graduate fellowship, the short course for industry technicians, committee work, and many other activities.

RAILROAD CAR SUPPLY

One of the most timely and pertinent topics dealt with during the four-day meeting was the problem of railroad car supply. W. E. Callahan (manager, Open Car Section, Car Service Division, Association of American Railroads) reviewed some of the problems and accomplishments noted during 1947 as a preamble to his discussion of the car supply outlook in 1948. He disclosed that approximately 44,500,000 cars were loaded in revenue service during 1947, representing an increase of 7½ percent over 1946 and exceeding the loading of all years back to 1930. Ton-miles soared to about 650,000,000,000 in 1947, breaking all records of peacetime years and generously exceeding the 638,000,000,000 ton-miles recorded in 1942.

During 1947, Mr. Callahan said, freight cars averaged about 46 miles, as compared with 42.4 in 1946, 49.3 in 1944 (the record) and 28.7 in 1930. All open-top cars were turned around in 13.8 days, indicating an average of over 26 round trips during the year. The speaker paid tribute to the high degree of car capacity utilization achieved last year by the sand and gravel industry. Release by the shipping public of the great bulk of their cars within 24 hours of arrival, he said, has done a great deal to cushion the effects of the worst car shortage experienced by American railroads since 1922. Sand and gravel carloads shipped in 1947 probably averaged about 58 tons, exceeding the previous record loading of 57.9 tons made in 1946 and 1943.

In the light of current forecasts of business conditions in 1948, Mr. Callahan said that car requirements

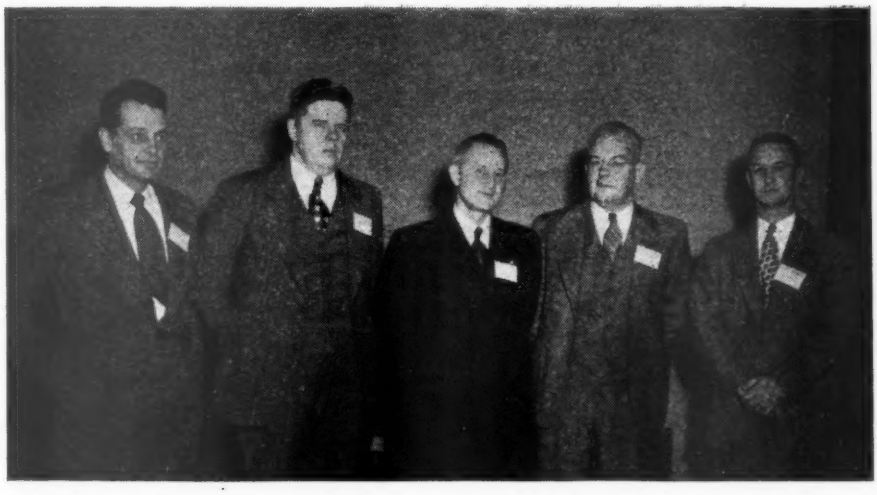
in the first quarter of the year would probably show an increase of 3½ percent over the same period last year. Gravel, sand, and stone carloads are expected to show an increase of 5 percent according to a forecast by the National Association of Shippers Advisory Boards, and even larger increases are indicated for other basic construction materials.

Mr. Callahan predicted that freight car ownership would show an increase of at least 60,000 units in 1948, even after allowing for reasonably heavy retirements. Although no overall gain was shown in total ownership during 1947 due to heavy retirements, hoppers were nevertheless increased by 10,084 units and covered hoppers by 1,528 units during the year. An all-time record of 59,900 gondolas and hoppers were on order in December, 1947, and by April or May of this year steel and other materials will be allocated to produce 14,000 new cars of all types each month.

Mr. Callahan pointed out that despite the severe car shortage in 1947, enforcement of car service rules had the effect of distributing available cars throughout the country on an equitable basis. Car supply for the sand and gravel industry will be somewhat improved in the last half of 1948 if tonnage follows the 1947 pattern and a continued gain is achieved in open-top car ownership. The industry's continued cooperation in the efficient handling of freight cars, including heavy loading, prompt release, and loading to, or in the direction of, owning railroads in accordance with car service rules, will help immeasurably to ease the effects of the shortage during the coming year. In protecting the heaviest peacetime traffic in history, Mr. Callahan concluded, the railroads will make good on their pledge to strive for the highest possible degree of service.

FEDERAL LABOR POLICY

New Developments in the Federal Labor Policy was the subject covered by Charles A. Horsky, counsel for the two associations. He said that the Taft-Hartley Act represents the latest step in the growing pattern of development which began in 20's. The fundamental point in his opinion is the consistent recognition of the fact that collective bargaining is the only practical method of labor-management relations. He described the history of collective bargaining, beginning with the first step, the Railway Labor Act of 1920. The War Labor Board during the war moved away from collective bargaining, said Mr. Horsky, but Congress definitely went back to it when it passed the Taft-Hartley Act. Under this act if the Labor Board has already recognized one union as the bargaining agent, it is considered an unfair practice for another union to call a strike in an attempt to take away control. The public, said Mr. Horsky, is entitled to protection against senseless strikes such as jurisdictional, etc. The law also says that it is unfair if either union or employer refuses to bargain in good faith.



• Harry E. Hallock (Testing & Research Laboratory, Columbus, O.); J. F. Barbee (Ohio State Highway Department, Columbus); R. R. Litehiser (Ohio State Testing Laboratory, Columbus); C. F. Proudley (North Carolina State Highway and Public Works Commission); Charles E. Brady (B.V. Hedrick Gravel & Sand, Lilesville, N. C.).

In describing procedure under the act, Mr. Horsky said that unions must each year file their bylaws and financial statements with the government and issue a statement to its members. The officers of the unions, up to the head, must file non-Communist affidavits. Communism, he said, is not a political philosophy, but an economic one. Communism aims to destroy our government and our unions as well. This part of the act makes it impossible for Communists to use government machinery to destroy our government. The act is a warning that the rights of the people will be protected.

Mr. Horsky said that the typographical union case will be a guide to government policy *re* the closed shop. The portal-to-portal act rid industry of the threat of the Walling Ruling. The act also takes care of pre- and post-liminary activity and the Wage Hour Administration will further widen the scope of principal activity. With regard to the controversy over the meaning of "regular rate of pay" the court says that it is everything the employee gets except overtime, but including bonuses. Some items have already been ruled out but there are still many which must be added to the regular pay. The Supreme Court, said Mr. Horsky is now interpreting this.

In answer to questions, Mr. Horsky said that no definite plans are yet under way for any amendments to the Taft-Hartley Act. He feels that the ban on the closed shop might possibly be repealed, along with the restrictions on union contributions to politics and the publication of papers containing political news.

PURCHASER—PRODUCER PROBLEM SYMPOSIUM

The first speaker in the course of a symposium on purchaser and producer problems was R. R. Litehiser, chief engineer, Testing and Research Laboratory, Ohio State Highway Department. He pointed out that despite any appearances to the contrary, it is *not* the purchaser's intention to crowd specifications with detailed technical requirements just to make them look impressive. In support of this contention, Mr. Litehiser compared Ohio's 1914 specifications covering aggregate materials with those in effect in 1947. The six grades of sand and gravel specified in 1914 compare with 12 grades in 1947, and the number of coarse aggregate sizes showed an increase from nine to twelve.

Even though the basis for purchaser requirements is often a matter of law rather than individual preference, Mr. Litehiser pointed out that engineering necessity is the dominant factor in setting up most specifications. For example, it has been found absolutely necessary to establish definite grading controls in order to give clear identity to the various standard sizes in the speci-

fications. In the final analysis, the speaker concluded, adequate specifications provide the only possible fair means by which both the purchaser and the producer may be guided.

C. E. Proudley, chief materials and test engineer, North Carolina State Highway and Public Works Commission, discussed the unique practice in his state of specifying aggregates on a concrete strength basis. Abrasion, soundness, absorption, specific gravity and similar properties of aggregates which are normally tested, have little relationship to the strength of concrete, according to Mr. Proudley. Actually, he said, the strength of concrete is more importantly influenced by characteristics of aggregates for which no adequate tests have been developed.

Specifying aggregates on a concrete strength basis, the speaker said, is largely dependent upon considerations of economy. There is perhaps little point in the practice when good materials are close at hand, but when this is not the case it may be better to use inferior local materials in richer mixes rather than ship in more costly aggregates. Mr. Proudley described the mix designing procedures which have been developed in North Carolina, and concluded with the significant comment that core tests show that designed strengths are met or exceeded in the majority of the jobs done.

Special characteristics for concrete aggregates were discussed by J. F. Barbee, engineer, Concrete Tests, Testing and Research Laboratory, Ohio State Highway Department. He mentioned the importance of specifications in order to assure that only good materials are used, and branded as "poor practice" the tendency to increase cement content in order to correct poorly graded aggregate. The resulting increase in volume change, according to Mr. Barbee, may seriously impair the quality of the concrete. He recognizes, however, that it is often necessary to compromise between ideal materials and those which are available locally.

John Goshorn, assistant chief engineer of the Ohio State Highway Department's Testing and Research Laboratory, covered special considerations which apply uniquely to bituminous aggregates by reading several passages from specifications.

The "rebuttal" for producers was handled capably by Stanton Walker under the heading of *Problems of Producing Sand and Gravel.* Mr. Walker expressed the opinion that specifications represent, on the whole, a real effort to describe materials on a realistic basis. There are, however, limitations on how much the producer can do to meet specifications once he has selected a deposit and erected a plant. There are, of course, some things the producer *can* do within the limitations of the material available, such as wash out silt, delete some flat particles, operate soft stone eliminators and impact crushers, and hand pick from special conveyor belts. There is additionally, Mr. Walker said, some possibility that sink and float methods may some day be successfully used by the industry.

Different specification requirements for the same use are, in Mr. Walker's opinion, a definite and justified source of annoyance to producers. He believes that some progress is being made to correct this problem as a result of efforts in developing simplified practice procedures.

Sand grading, Mr. Walker said, is still one of the industry's tougher problems. He feels that fineness modulus requirements fixing limits of plus or minus 10 are simply not realistic, and that plus or minus 20 should be adopted as a more attainable specification goal. In this connection he made mention of the tendency of river sands to concentrate sizes in certain brackets.

At the conclusion of the symposium an excellent color movie with commentary was presented through the courtesy of the Keystone Sand Division of Dravo Corporation. Entitled *The Story of River Sand & Gravel,* the movie showed dredge recovery, processing, barging and distribution activities of one of the company's major units. It was announced that the film is available without charge to all groups and organizations.

DEPLETION AND DEPRECIATION

Depletion and Depreciation Practices in the Sand and Gravel and Ready-Mixed Concrete Industries was discussed by Robert Ash, tax counsel for the two associations. He referred back to his talk at Los Angeles last year, in which he told of the great need for a system of uniform cost accounting and of the fact that many producers do not realize the importance of such a system to them. Such a system, he said will soon be ready. In describing it he said that depreciation of equipment and depletion of deposit must be deducted from income. Congress can tax gross income at any time under existing laws but has not done so since the income tax law was passed.

In discussing depreciation Mr. Ash said that the act passed in 1913 permitted reasonable deductions and that later laws have allowed still more. Inventories, however, are not depreciable, nor is stock in trade. Intangible property is subject to depreciation if its use in the trade or business is definitely limited in duration. Examples are patents, copyrights, licenses and franchises. Property, the use of which in the trade or business is not definitely limited, is not subject to the allowance for depreciation. Examples are good will, trade names, trademarks and formulas. Some property by its very nature does not depreciate as the term is used for tax purposes. The best example is land, exclusive of improvements.

Deduction for depreciation, said Mr. Ash, is allowable to the person who suffers an economic loss as a result of the decrease in value of the property due to depreciation. Any owner of property is entitled to a deduction. This depreciation allowance must be taken each year even if the business is operated at a loss or if no tax benefit is received.

The Treasury Department permits taxpayers to figure depreciation allowance in accordance with any recognized trade practice, said Mr. Ash, and he described some of the more common methods. The straight-line method is most common because it is the simplest. Under this method the cost or other basis of the property, minus its estimated value, is deducted in equal annual installments over the estimated useful life of the asset.

The unit-of-production method is also quite common. When a machine is purchased an estimate is made of the number of units it will produce during its useful life. To get the depreciation allowance the cost is divided by the number of such units. The figure thus secured is then multiplied by the number of units actually produced during the year.

A third method is the declining or diminishing balance method. Under this method the greatest amount of depreciation is taken in the first year of use, with continually decreasing amounts of depreciation in later years. Producers are cautioned to study this method carefully before adopting it. For example, if a machine has a 10 percent rate the difference between cost and estimated salvage value is first determined. The allowance for the first year is then 10 percent of that amount. In each succeeding

year 10 percent of the previous remaining balance is deducted. The Treasury Department, said Mr. Ash, has indicated that it would permit members of these industries to use this method provided that a rate of 150 percent of the straight line rate be used.

In adopting this method permission must be obtained from the Commissioner of Internal Revenue and it must be applied for within 90 days from the beginning of the year in which the new method is to be used. Taxpayers who have not previously filed a return may adopt any appropriate method in their first return. If a later change of method is desired then permission must be obtained as above.

A reasonable deduction is permitted for obsolescence, said Mr. Ash, and a broad interpretation is made. Regardless of the estimated useful life of a machine, if a new invention or other development makes this machine obsolete and economically useless before that time the entire cost can be deducted during that period.

The depletion rules, said Mr. Ash, are in many ways similar to those for depreciation, but they are entirely dependent on legislative grace. The Revenue Act of 1913 had the provision for depletion tacked on to the one for depreciation; it read: "not to exceed, in the case of mines, 5 per centum of the gross value at the mine of the output for the year for which the computation is made."

A fundamental rule is that the allowance is made to the person owning an economic interest in the property, in other words, to the one having the right to share in the minerals produced.

According to Mr. Ash, the computation of cost depletion ordinarily is simple. The first step is to determine the mineral contents of the mine, and this must be done according to the method current in the industry and in the light of the most accurate and reliable information available. The estimate of recoverable units shall include, both as to quality and grade, the ores and minerals in sight, blocked out, developed or assured. Probable or prospective ores and minerals must also be included, but estimates on these may be made with respect to quantity only in case they are extensions of known deposits or are new bodies whose existence is known.

The next step is to determine the cost or basis of the property which is done by deducting the residual value of the land to determine the cost of the sand and gravel. This basis is then divided by the estimated recoverable units in the property or the "depletion unit". The computation is made each year by multiplying the depletion unit by the number of units sold.

Percentage depletion, said Mr. Ash, permits taxpayers to deduct a specified percentage of the gross income from the property. This deduction cannot exceed 50 percent of the net income from the property. Taxpayers entitled to it may elect to use either cost or percentage depletion, whichever will give them the most benefit. Percentage depletion was developed to encourage the wildcatting of oil and to minimize the complications of discovery depletion.

This form of depletion is purely arbitrary and has no relation to cost.

Because of its simplicity and the obvious tax advantages other industries have been able to come in under the statute. The sand and gravel industry, he said, has made some effort to have Congress include it within the list of industries covered, but so far with little success. The position of the House Ways and Means Committee and the Senate Finance Committee is that sand and gravel are such commonplace and easily-found products that they should not be given the benefit of the section. Extensive effort will be necessary to overcome this fallacious reasoning, said Mr. Ash.

Mr. Ash said that discovery depletion is available in connection with the production of minerals or deposits other than those to which percentage depletion is applicable. In this case if a taxpayer discovers a mine he may use its fair market value at the date of discovery or within 30 days thereafter. It must first be determined if a new deposit or mineral has been discovered; then it must be determined if the value of the newly-discovered deposit is disproportionate to the cost, a complicated problem. Many problems arise in connection with all methods of computing depletion.

With respect to the 3 percent tax on the transportation of property for hire, Mr. Ash said that on December 3, 1947, the Treasury Department issued a study on this subject, showing in the case of certain commodities including sand and gravel that transportation cost amounts to more than half the value of the product at destination. Where large volumes of raw materials are involved small differences in cost may determine the source of supply to be used. Mr. Ash believes that there is a possibility that this tax will be repealed when Congress revises the Internal Revenue Code.

In the discussion of Section 735 of the Code, Mr. Ash said that it was passed to give relief to producers of natural resources who during the war produced in excess of normal production by exempting such

• A. O. Stark; Paul P. Bird (Boston Sand & Gravel Co., Cambridge, Mass.); R. C. Collins (Warner Co., Philadelphia).

• Walter E. Trauffer (Pit and Quarry, Chicago); Otto Kuehne Jr. and Fred Kuehne (both of the Kansas Sand Co., Topeka, Kan.).

excess production from the excess profits tax. Now, said Mr. Ash, the Treasury is denying relief within the next few months.

In the discussion which followed Mr. Ash's paper Irving Warner (Warner Co.) said that there was a tendency among auditors and comptrollers to build up assets unreasonably, thereby increasing taxes. He also said that land cannot be depleted as such; it must have ore value.

CEMENT RESEARCH PLANS

Again, as at Los Angeles last year, one of the best talks was given by Dr. A. Allan Bates, vice-president of the Portland Cement Assn. His subject this time was *Research Plans of the Portland Cement Assn.* After commenting on the similarity of interests of the aggregates, ready-mixed concrete and cement industries, Dr. Bates presented a brief but very complete breakdown of the basic classes of engineering materials. The oldest and still the most prevalent is lumber, which has been used for at least 50,000 years and which is now consumed at the rate of about 60 million tons annually. Cut stone is about the same age but is dying out rapidly except for ornamental use, with a present annual consumption of about 2 million tons. Ferrous metals, in use for this purpose about 5,000 years, are consumed at a 100,000,000-ton annual rate. In the same age group but with annual use rates of 8, 6 and 10 million tons respectively, are non-ferrous metals, glass and structural clay. After these engineering materials made their appearance there were no basically new ones until about 100 years ago when plastics, light metals and portland cement concrete made their appearance. Plastics consumption is at about the rate of 3 million tons, light metals 1½ million tons and concrete 250 million tons, more than all the others combined. In other words, said Dr. Bates, the baby has become the giant, and because concrete is the most permanent of all and has many other advantages, there is no telling what may yet develop.

Dr. Bates then commented on a statement which has often been made by poorly-informed people to the effect that modern concrete is inferior to that produced before 1930. In any discussion of this subject it should be remembered: (1) that more than half of all the concrete ever poured has been poured since 1930; (2) that most of the older concrete, much more than half, has long since disappeared; (3) that since 1930 the applications of concrete have been bolder, and more chances are being taken. Portland cement concrete, said Dr. Bates, is in its adolescence.

Dr. Bates then went on to give a rough outline of the more expanded and more detailed research program planned by the P. C. A.

ACTIONS ON INTRASTATE RATES

Mr. Ahearn reviewed the problem of intrastate and interstate freight rates on sand and gravel before a capacity audience in the Pavillon Caprice on the closing day of the convention. The final result of the original and amended applications for increased interstate rates on sand and gravel, according to Mr. Ahearn, is that the carriers are now asking for an increase in Eastern Territory of 41 percent, in Southern and Western Territory of 31 percent interterritorially between Southern and Western Territories, all percentage increases being subject to a proposed maximum of 33 cents per net ton.

Although final decision has not been reached, two interim increases have been authorized by the Interstate Commerce Commission, the first effective October 7, 1947, when sand and gravel rates, along with practically all commodities, were increased by 10 percent. On December 29, 1947, the Commission set aside this order, authorizing in place of it an increase of 20 percent.

In covering actions by state commissions with respect to increases in intrastate rates patterned after increases in interstate rates authorized by the I.C.C., Mr. Ahearn presented in tabular version (see table) the situation in the 37 states from which reports were received. From the evidence available, Mr. Ahearn said, it does not appear that the sand and gravel industry in most states organizes for the purpose of participating in hearings before state commissions on proposed intrastate rate increases. Although most states appear to follow in the footsteps of the I.C.C., some pursue an independent course of action and do not hesitate to make decisions which

Table for Intrastate Rates

State	Ex Parte 123	Ex Parte 162	Ex Parte 166
Alabama	No report	No report	10% increase denied
California	10%	20%	10%
Connecticut	10%	15¢ per ton	10%
Delaware	10%	15¢ per ton	20%
Florida	No report	No report	10% increase denied
Idaho	No report	No report	10%
Illinois	10%[1]	15¢ per ton	Hearing on Jan. 20/48
Indiana	10%	15¢ per ton	10%
Iowa	No increase	(10%, not to exceed 15¢ per ton)	10%
Kansas	No increase	5¢ per ton	No increase
Kentucky	10%	15¢ per ton	10%
Louisiana	10%	15¢ per ton	(Hearing but no decision)
Maine	10%	15¢ per ton	10%
Massachusetts	10%	15¢ per ton	10%
Michigan	No report	No report	20%
Minnesota	10%	15¢ per ton	10%
Mississippi	10%	15¢ per ton	(Hearing but no decision)
Missouri	10%	10¢ per ton	10%
Nebraska	(See Note 2)	10%	10%
New Hampshire	10%	15¢ per ton	10%
New Jersey	10%	15¢ per ton	20%
New York	10%	15¢ per ton	10%
North Carolina	10%	15¢ per ton	10%
North Dakota	No report	No report	No action
Ohio	10%	(20%, maximum of 15¢ per ton)	10%
Oklahoma	10%	(See Note 3)	No action[4]
Pennsylvania	10%	15¢ per ton	20%
Rhode Island	10%	15¢ per ton	10%
South Dakota	10%	15¢ per ton	10%
Tennessee	10%	No increase	No increase
Texas	No increase	15¢ per ton	(Hearing but no decision)
Utah	10%	15¢ per ton	(Hearing but no decision)
Vermont	10%	15¢ per ton	10%
Virginia	No report	15¢ per ton	10%
Washington	No report	No report	10%
West Virginia	10%	15¢ per ton	10%
Wisconsin	10%	15¢ per ton	5%

[1] An exception was made from producing points within 150 miles of Chicago to points intermediate to Chicago Switching District.

[2] After extensive hearings, the Nebraska Railway Commission authorized a scale of rates beginning with 40 cents per ton on 25 miles, 45¢ on 40 miles, then 5¢ per ton increase on each 10 miles. These rates applied to shipments in less than ten-car lots from one consignor to one consignee the same day. At the same time they authorized 80 percent of these rates to apply on shipments in ten cars or more the same date of shipment.

[3] The Oklahoma Commerce Commission authorized an increase of 5 cents per ton for distances up to 20 miles. Then followed additional increase of 1 cent per ton for additional 10 miles of distance, until a maximum increase of 15 cents per ton was reached.

[4] The Oklahoma Commission held a hearing on November 19, when the carriers sought an interim increase of 10 percent. Decision not yet announced but indications are that temporary 10 percent increase will be allowed

depart from the action taken on interstate rates.

Mr. Ahearn urged producers in the sand and gravel industry to take more aggressive action with respect to the intrastate rate problem, and to persuade state bodies, where the practice does not now exist, to hold hearings for the purpose of receiving testimony on proposed increases. We simply must not, he said, let our case go by default in the states, and it is painfully evident that we have a job to do. Arbitrary increases in freight rates on sand and gravel, he pointed out, do not mean increased revenue for the railroads. These materials are among the lowest value commodities handled by the railroads, and they are highly sensitive to any increase in freight rates.

If the final decision in Ex Parte 166 superimposes an even further increase on the 20 percent already granted, Mr. Ahearn feels that new impetus will be given to non-commercial production of sand and gravel, or established commercial producers will turn to the alternative of operating portable plants. Customers already pay more for the transportation of sand and gravel than they do for sand and gravel itself.

Among all the commodities handled by the railroads, the speaker continued, sand and gravel tonnage in 1946 was exceeded only by bituminous coal, anthracite coal and iron ore. Although forced to contend with the same factors of increased cost as the railroads, the industry's average price in 1947 was 67 cents, as against 62 cents in 1942. The imposition of further large rate increases, Mr. Ahearn concluded, will cause marked changes in systems of sand and gravel production, and transportation, and railroad sand and gravel revenues will almost inevitably decline at a more rapid rate.

COST ACCOUNTING SYSTEM

The report of the Committee on a Cost Accounting System for the Sand and Gravel Industry was presented by O'Neal M. Johnson, committee consultant. The primary objective of this system, he said, is to bring out facts on which management can base its decisions. Every executive should know a little about what such a system can and cannot do. In the first place it provides a balance sheet and profit and loss account; it also gives the detailed cost of each product so that a producer can decide which ones to eliminate; it gives a record of materials and supplies used in production, and helps to trace and eliminate thefts and other losses. Cost accounting, said Mr. Johnson, brings together the other two forms of accounting which every producer uses and gives him unit costs. About 85 percent of the work involved is already done and only the other 15 percent needs to be done to get the valuable additional benefits.

Mr. Johnson pointed out that the use of this system tells a producer what his costs are and what his selling price should be, and also which are his most profitable products. He also said that it makes possible industry accounting which permits comparisons to be made throughout the industry. He emphasized that accounting is only a tool which will not in itself reduce costs, but that it is the only way management can find out what the costs are. Management must then use this information.

MODERN RAILWAY BALLASTS

In the first technical session of the four-day meeting, H. W. Protzeller (Consulting Engineer, Railway Equipment Division, Nordberg Manufacturing Co.) led off with a paper entitled *Modern Railway Ballasts*. In his discussion Mr. Protzeller covered the principal factors which tend to reduce load capacity and effectiveness of ballast. In practically all cases, he said, analysis shows that dirt and debris present in the ballast are among the more important destructive agents which weaken the ballast element as a whole. Life, efficiency and general usefulness of ballast can be greatly increased if dirt and water can be kept out, or if their destructive tendencies can be minimized.

His company's research program, the speaker stated, has definitely proved that "through the ballast" drainage provided by coarse ballast materials simply permits surface water quickly to permeate the subgrade, where it does a great amount of damage, since practically all types of soils found in railway subgrades are very much less stable when wet than when dry.

It has been found equally important to prevent subterranean water from rising into the ballast, and for these reasons the water problem has become one of the most important phases of the Railway Equipment Division's ballast studies.

Ballasts consisting of all large particles of aggregate materials (either in the form of clean crushed stone or natural gravel) has a very large percentage of open voids, averaging from 38 to 42 percent of the entire volume of space occupied by the ballast. Although such ballast effectively stops the rise or flow of capillary water, it permits practically all rain water to flow into the subgrade material. Gravity flow is counteracted in some measure by adhesion, which causes a certain amount of water to be retained wherever two particles of aggregate are allowed to touch. Since when more points of contact are provided, more water can be retained, the research program has sought to produce a ballast mixture which would take full advantage of this adhesive action.

Adhesive water, Mr. Protzeller pointed out, may be still further increased by lessening the volume of voids. Since even 5-size graded ballast reduces voids to only 33 to 36 percent for natural gravel and 38 to 41 percent for natural aggregates, the only practical material for further reducing the voids is sand. It was desired, then, to secure a mixture which would absorb all the surface water that falls on it, and just sufficiently fine so that the maximum capillary rise would be from the subgrade line to the ballast surface. With very fine sands, the speaker pointed out, the entire mass of the ballast acts as a pump under the vibratory action of passing wheels, drawing water upward into the ballast from depths of more than 20 feet.

Working along these lines, an effective ballast has been developed which has only 12 percent of voids, using a sand which weighed 112 pounds per cubic foot and had open voids of 28 percent. Numerous experiments indicate that such dry-sand-filled ballast, made up of either crushed stone or natural graded gravel aggregates 12 inches deep, will hold all of the water equivalent to a one-inch rainfall, about 70 percent of a two-inch rainfall and approximately 50 percent of a three-inch rainfall. Tests also show that the water thus held in the ballast rises to the surface and evaporates at the following approximate rates: one inch of rainfall in 16 to 18 hours; two inches in 30 to 36 hours; and three inches in 48 to 60 hours. Sand-filled ballast has the additional advantage over mud- or dirt-filled ballast that it is just as strong when wet as when dry.

Mr. Protzeller expressed the opinion that properly graded, clean ballast applied on the track and filled with suitable sand in the amount of 1/4 to 1/3 of the total weight of the aggregates, is superior to any

ballast now in use. He particularly stressed the importance of applying the sand after the coarse materials are in place, and not by mixing sand and gravel at the pit. The kind of sand used is very important. It should be sharp and free flowing. All of it should pass through a 1/4-inch square opening, and not more than 15 percent be retained on a 1/10-inch square opening screen. Not more than 5 percent should pass through a 1/50-inch square opening screen, and the grading between these limits should be as even as possible.

In the speaker's opinion, a vast new field is opening up for properly prepared ballast, with greatly increased markets at profitable prices for producers who are strategically located.

AGGREGATE CHARACTERISTICS

In his paper *Effect of Aggregate Characteristics on Properties of Concrete,* Stanton Walker reviewed the significant characteristics of aggregates for concrete, covering them in two broad categories. First, those on which sufficient knowledge is available, or assumed to be available, to permit of quantitative limitation in specifications; and second, those known to influence the properties of concrete, but not so tangibly as to permit of specific limitations. In the first category he listed four primary characteristics: soundness and durability, deleterious particles, hardness and strength, and size and grading. In the second category, according to Mr. Walker, are shape of particle, surface texture, chemical and mineral composition, absorption, specific gravity, weight per cubic foot, voids, volume change characteristics due to temperature and moisture, size and shape of internal pore space, susceptibility to chemical reactions with cement, and the modulus of elasticity.

The desirable properties of mineral aggregates, according to Mr. Walker, can be controlled only to a limited extent by plant processing, and to a large degree, therefore, dependence must be placed on the selection of suitable sources of materials. There is, in any case, a limit beyond which processing is neither economical nor practicable.

Concrete, Mr. Walker said, should be strong enough to withstand the loads imposed, hard and tough enough to withstand necessary abrasion and erosion, and durable enough to withstand the destructive agencies to which it may be exposed — principally the weather. Lack of durability is contributed to by many factors which have nothing to do with aggregates. Specific reference in this connection was made to careless proportioning, excessively wet mixing, failure to use sufficient cement, improperly graded aggregates, and poor placement and design of the concrete. Some part of the difficulties, however, can be traced to the aggregates, since they comprise about three-quarters of the volume of concrete. Certainly, the speaker added, if the aggregate particles disintegrate, such disintegration will contribute measurably to the failure of the concrete.

Mr. Walker showed a number of slides to demonstrate that disintegration of concrete is not just something to talk about, but that it really exists, and to a disturbing degree. Insofar as aggregates contribute to concrete failures, he said, it is the industry's problem to learn how to select them, how to protect them, and how to minimize the difficulties. In the laboratory, as well as in the field, a wide range in quality of concrete is obtained where the aggregate appears to be the only variable.

In regard to air entrainment, Mr. Walker said that while this development offers promise of compensating for the deficiencies of certain aggregates, it is clear that there are some aggregates which it will not benefit. He then went on to discuss the effects of a number of aggregate characteristics which are not generally covered in specifications. Surface texture of the aggregate, Mr. Walker stated, has little effect on the compressive strength of the concrete, but strong and rather tough textured particles generally give flexural and tensile strengths higher than hard and smooth particles.

According to the speaker, except in special cases, the role played by chemical and mineral composition is not clear. The principal concrete use in which mineral composition of the aggregates is an important consideration is in fireproof construction. Where concrete may be subjected to high temperatures, siliceous aggregates, with their higher coefficient of volume change, may cause serious spalling in the presence of high temperatures, with a consequent greater exposure of reinforcing steel. In Mr. Walker's opinion, specification of chemical composition for other exposures (such as aggressive solutions) is not justified, since ordinarily the cement paste and the mortar-matrix is the weak link.

Similarly, Mr. Walker said, the use of absorption as a specification limit seems inadvisable, even though the broad general statement can be made that the more absorptive aggregates are less likely to be durable than the more dense ones. There are enough exceptions to the rule to cloud the issue, and in any case the size and shape of the pore space is, in all probability, of much greater importance than the amount of change.

A PREVIEW OF CONSTRUCTION ACTIVITY

Thomas S. Holden, president of the F. W. Dodge Corporation, presented a comprehensive forecast of *Construction Activity in the Year Ahead.* As the listeners settled themselves comfortably in the blue nicotine haze, Mr. Holden outlined his analysis of the current year's probable construction activity. He declared that much of the progress made during 1947 toward balanced production and the stabilization of the American economy was due to three factors: (1) the removal of government controls; (2) the absence of large-scale strikes in key industries; and (3) time.

To substantiate his opinion that encouraging strides had been made in 1947, Mr. Holden mentioned the following facts: "Last year's housing starts were within 10 percent of the peak volume of 1925. Combined passenger car and truck production was within 11 percent of the 1929 peak. Production of freight cars was the highest since 1925." Upon facts such as these the speaker based his prediction that "allocations of basic raw materials made in the free market are likely to be essentiallly sound . . . more satisfactory . . . than allocations by governmental agencies."

Bringing the review up to date on construction activity, Mr. Holden pointed out that the most conspicuous advance was made in eliminating the delivery delays and other obstacles to continuous operation which had slowed progress so noticeably in 1946. As contrasted with the completion of 65 percent of housing units started in 1946, the 1947 statistics showed completions of an estimated 93 percent of starts.

The speaker referred to one respect however, in which less satisfactory progress was made during 1947—the continued upward trend of commodity prices and construction costs. After a mild technical setback in the second quarter, the index continued to rise, although (since May) at a monthly rate appreciably less than that of the preceding six months.

Monetary and price inflation are still the major problems in 1948,

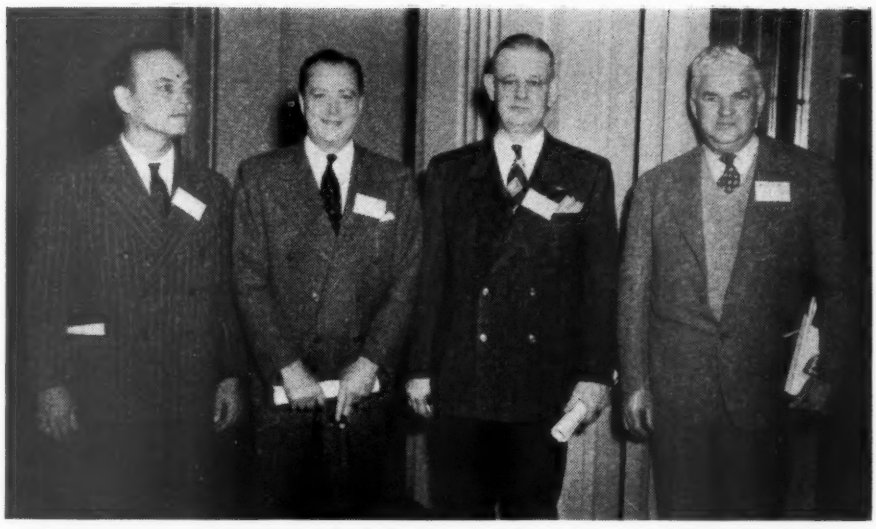
said Mr. Holden, but the attitude of the public has changed since the resumption of the upward trend last spring. Whereas there had been a notable degree of buyer resistance previous to this time, as reductions failed to materialize, a gradual acceptance of current prices was noticed, and willingness to proceed with construction projects was evidenced.

In the light of overoptimistic expectations early in 1947 that price costs would be stabilized, Mr. Holden posed the question whether sufficient progress had been made in the year just past to justify hopes for stabilization during 1948. He pointed out that inflationary influences, such as high levels of government spending, possible wage increases in key industries and prospective heavy exports of basic commodities, profoundly affect the current situation. In his opinion the only significant deflationary influence is a tightening of bank credit and possibly of home mortgage credit. Mr. Holden described as one current trend "the search for a formula that will produce just enough deflation for a mildly salutary effect without jeopardizing the election prospects of either political party." He indicated that since quick action to cut individual income taxes might tend to lessen demands for higher wages in major industries, political considerations will materially influence the economic picture in 1948.

Basing his statement upon a Dodge Corporation survey of October, 1947, and a similar survey conducted by *Fortune* magazine the following month, Mr. Holden expressed the opinion that both polls indicated a "preponderant expectation of a moderate downturn", which might occur between the second and third quarters of this year. He envisions the big question concerning this year's construction volume as resting in the probabilities of increased material production and manpower. He expressed doubt as to the further expansion of material and manpower supplies beyond the current record production and employment volume.

Two cogent reasons were thus given for caution in estimating the 1948 construction volume: a possible temporary setback to restrain soaring prices and correct market-imbalances, and the possibility that overall material and manpower supplies cannot be greatly expanded.

The F. W. Dodge Corporation, therefore, makes moderate estimates for the entire year's dollar volume increases over 1947, as follows: non-residential building, 9 percent; residential building, 4 percent; heavy engineering construction, 7 percent; combined building and engineering contracts resulting from these increases, 7 percent. Dodge's estimated percent increase contrasts sharply with the U. S. Commerce Department's estimate of 25 percent. This discrepancy is partially explained by the fact that Dodge figures cover only the 37 states east of the Rocky Moutnains, while the Commerce Department's statistics cover all of the United States. Moreover, the department's figures represent estimates based upon construction started and then projected ahead; Dodge figures are factual (although coverage of low valuation projects is incomplete) and represent work starting or about to start.



• Louis Schilling (J. E. Schilling Co., Miami, Fla.); Glenn Browning (Lehigh Portland Cement Co.); Robert F. Porter (Harry T. Campbell Sons Corp., Towson, Md.); Joseph P. Sheehan (Edward Balf Co., Hartford, Conn.).

Mr. Holden regards as unlikely and also undesirable a continuously rising contract volume, which would cause an inflationary boom. He would prefer to see, in the middle part of the year, a "moderate setback", a condition which would conceivably make for a far healthier situation in 1949 than would be likely in the event of a continuous boom this year.

The speaker expressed the belief that price stabilization can be brought about by a "mild corrective recession", basing this opinion upon the following facts which point to a more wholesome situation than existed in 1920, just before the historic deflation began:

1. Farm product prices will probably not be deflated as fast or as far as in 1920.
2. Labor, now much more fully unionized than in 1920, will cause wage scales to be pegged in productive fields.
3. Business and government leaders are today aware of the threat of an inflation and of the results of a drastic deflation, not blindly optimistic as in earlier boom times.
4. More progress has been made in post-war production and construction since August, 1945, than in a comparable period before the break in 1920.

In closing, Mr. Holden expressed the belief that a return to government controls and subsidies would merely increase construction costs instead of decreasing inflation. He declared that American construction methods of today in all categories top those of all other nations.

1948 HIGHWAY CONSTRUCTION

The second address of the afternoon was also concerned with a look ahead—this time into the immediate future of the nation's highway program.

Hal P. Hale, executive secretary of the American Association of State Highway Officials, who was introduced by Murray D. Shaffer, director of the Ohio Department of Highways, ably presented the subject of *The Highway Program Ahead.* His humorous introduction eased him gently into what proved to be an impressive array of facts and figures forming the background for his theme—the need for continued adequate federal aid.

Mr. Hale began his address by stating the salient points of his association's history and functions. He declared that the organization at present has a shortage of 9,800 trained men. Despite this handicap, he said, the understaffed personnel of the American Association of State Highway Officials has within

the last 30 years designed and supervised the construction of the "greatest highway system that the world has ever seen". He indicated the ramifications of this system—how closely related to it are the nation's great motor, petroleum and trucking industries—as well as the development of all other types of carriers, including the 34,000,000 or 35,000,000 private motor vehicles rolling on highways today.

At this point Mr. Hale read from an address of B. S. Hutchinson, chairman of the Highway Policy Committee of the Automobile Manufacturers Association, a tribute to the accomplishments of highway and traffic engineers. Mr. Hutchinson gives full credit to these experts for having promoted the "safe and efficient movement of people and goods over the highways". Commenting upon Mr. Hutchinson's opinion that "highways and the motor industry are complementary and must be developed together", Mr. Hale observed that he would go farther and say that the highway program should be—ideally—a little *ahead* of the motor industry. He considers Mr. Hutchinson's estimate of $4,000,000,000 as the annual requirement for meeting local and state highway needs reasonably acceptable. He bases his opinion on the $2,500,000,000 annual expenditure of the prewar period. Taking 100 as the base figure for composite per-mile construction cost in 1940, the cost during the last quarter of 1947 was 197.

To arrive at the most plausible answer for the question: "What is the job ahead for the highway official and the producer?" Mr. Hale presented a number of statistics which filled in the highway picture. The United States today has 3,200,000 miles of highways of all categories. About 231,000 miles form the Primary Federal Aid System, while 340,000 miles of road constitute the Secondary Federal Aid System—making a total of 571,000 miles in the entire federally subsidized system. (Mr. Hale expects this figure to hit 600,000 very soon.) This means that more than 2,600,000 miles of roads are not receiving federal aid. The speaker pointed out that it is the highway official's responsibility to do all within his power to prevent the dissipation of the limited funds available for highway construction.

By means of the Federal Aid Act of 1944, Mr. Hale stated, there came into being a 40,000-mile National System of Interstate Highways, a part of the 231,000-mile primary system.

Of the 231,000 miles of the primary system, 110,000 miles have improved to acceptable standards; and of the 110,000 miles, 42 percent (about 45,000 miles) are at least 20 years old, which means replacement or new construction within the next ten years. On the secondary system, about 55 percent will need replacement in the next decade.

In answer to arguments that money has been "just pouring in" for road construction and maintenance, Mr. Hale reminded his audience that at least two important considerations are usually overlooked—the tremendous number of automobiles on the highways today, approximately 37,000,000, and the drastic increase in operating and construction costs.

In accounting for the sources of the revenue available for highway construction and maintenance in 1946 the speaker gave the following figures:

From gasoline taxes.	$1,064,681,000
From licenses	551,318,000
Total revenues ...	$1,615,999,000

Another set of statistics accounted for the manner in which highway departments spent these funds. Maintenance of state highway systems accounted for $318,838,000, an amount which is expected to be exceeded this year. Department service required $166,137,000; administration, equipment, etc., $89,309,000; highway patrol, $41,303,000. The remainder available for state and federal highway construction is $620,396,000, plus the $138,829,000 received from the federal government in 1946. These figures, Mr. Hale indicated, should prove the need for increased gasoline taxes for swelling the highway revenues. Nine states now have raised their gas tax rates. Reviewing the progress made on the highway program of 1944, the speaker reported that by December 31, 1947, six months previous to the end of the third fiscal year of the program, construction under way totaled about $684,000,000; planned and approved (not let to contract), $338,000,000; programmed only, $732,000,000. If conditions had been improved as anticipated, said Mr. Hale, the program would have been about twice as far along by this time.

The extension of the Federal Aid Act of 1944 is being sought through two bills introduced on January 7 of this year by the Honorable Paul Cunningham of Iowa. The new highway program will ask federal aid at the rate of $500,000,000 a year indefinitely. A continuous program, rather than short-term grants, is wanted in order to eliminate the battle for a new bill every few years. In addition, the backers are asking that the program be for the fiscal year ending June 30, 1950. This means that it will become effective July 1, 1949, with funds allocated not later than January 1, 1949. Hearings were scheduled to begin on January 29 of this year.

Mr. Hale's valedictory story about the fellow with the eyes that bugged out and the ringing in his ears scored a bull's eye on the unprogressive lads of the opposition who are still wearing shirts too small for them.

THE TAFT-HARTLEY ACT AND THE CONSTRUCTION INDUSTRY

In introducing his subject, *What the Taft-Hartley Act Means to the Construction Industry,* James D. Marshall, assistant managing director of the Associated General Contractors of America, reminded his audience that in unionized metropolitan areas there has been practically a closed shop condition in the construction industry. He also pointed out that "in the passage of the Taft-Hartley Act, there has been almost a complete reversal of public opinion as expressed by the government toward organized labor", more and more power being given to employees in choosing their representatives. The act does not "deal with the individual workman's right to work or not to work . . . it deals with the union's right to curtail his work".

Mr. Marshall stated that in order to avoid serious trouble, such as would inevitably result from a sudden shift to an open shop basis in the construction industry where it has been long and solidly unionized, his organization feels an obligation, in trying to apply the Taft-Hartley Act, to make the transition as quickly and smoothly as possible—and with the full help of organized labor. He added that the association enjoys the full cooperation of the National Labor Relations Board, and that the leaders of the American Federation of Labor have not as yet offered active opposition to its efforts.

In discussing the Wagner Act, Mr. Marshall declared that it was never applied to the construction industry. The reason he believes, is that the National Labor Relations Board considered it uneconomical to attack the vast problem of fitting the act to the industry, in the light of the lack of public interest.

The speaker stated, in answer to

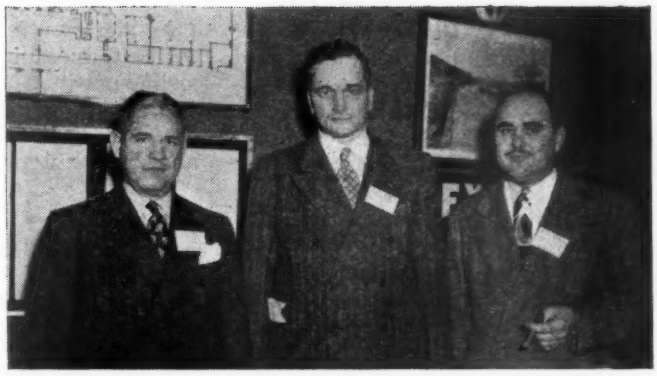
the question often asked, "Does the Taft-Hartley Act cover the construction industry?" that considering the complex nature of the industry, it should be treated as being covered. The Associated General Contractors of America expect and hope that the N.L.R.B. will treat cases under its jurisdiction on this basis. Due to the peculiar conditions existing in the construction industry the average contractor, hiring and laying off men as the work demands, has a difficult problem "unless the pattern that generally prevails in the industry can be recognized by the N.L.R.B". Mr. Marshall also hopes that the Board will recognize and adopt the pool-of-employment idea.

Upon the matter of jurisdictional disputes, Mr. Marshall pointed out that the Taft-Hartley Act provides severe penalties for shutdowns or other measures taken to force an employer to hire this group instead of that. It is necessary to the best interest of the construction industry to have the N.L.R.B. work out very speedily a means of establishing the jurisdiction of the 19 "international" unions in the industry and their subordinate locals.

Of the two reactions to the jurisdictional dispute—threatened court action or arbitration—the speaker prefers the latter, with a strong accent upon the prevention of trouble, rather than "settling" it after it has happened. As a start in this direction the N.L.R.B. has urged the industry to set up joint boards to function voluntarily for those willing to accept its decisions and thus keep out of court many cases which would otherwise slow up the application of the act. The Associated General Contractors of America is now a member of a joint committee, also including trade associations, to work on plans for such a body. This is the first time in many years that an effort has been made to work out a plan admitting employers to membership on a board determining jurisdiction. It is felt that a project of this kind is best arbitrated within the industry on a purely voluntary basis, with government interference at the minimum.

The Taft-Hartley Act, said Mr. Marshall, also contains provisions aimed at the secondary boycott and the sympathy strike in the construction industry. This fact, together with the right to sue the union for breaches of agreement, may cause important changes in the structure of unions in the construction industry. "Feather-bedding", a serious obstacle in the construction industry, often exists under contract agreements. In the Taft-Hartley Act, the legitimate practice of claiming pay for being called to work actually not provided is not penalized; it is the extortion of money for service never performed that is hit.

Mr. Marshall closed with the statement that, with the continued support of the N.L.R.B. and the all-important cooperation of the labor unions, there is no reason why the act cannot be fitted to the requirements of the construction industry.



• Ralph H. Anderson (W. E. Anderson Sons Co., Columbus, O.); C. I. Bohmer (The Jaeger Machine Co., Columbus, O.); W. C. Hineman (American Aggregates Corp., Columbus, O.).

SAFETY CONTEST

The presentation of safety trophies to the winners of the 1946 annual safety contest of the National Sand and Gravel Assn. was preceded by a plea from Mr. Ahearn that all members not now entered in the contest contact the U. S. Bureau of Mines and enter it. He then announced the winners. The winner in Class A for plants of over 100,000 tons' annual capacity was the Irwindale, Calif., plant of the Consolidated Rock Products Co. In accepting the attractive trophy presented by *Rock Products,* Robert Mitchell, president of the company and a past president of the association, also urged all members to join and told of the many benefits which result. His company's plants have won four trophies since the contest was started in 1936 and a spirit of rivalry has developed among them which has been beneficial in every way. He also introduced Frank Carroll, superintendent of the Irwindale plant, and John D. Gregg (John D. Gregg, Whittier, Calif.), who built this plant and later sold it to Consolidated.

The winner among Class B plants was the American Aggregate Corporation's plant at Indianapolis, Ind. P. E. Siniff, superintendent, accepted the trophy.

• W. H. Stewart and J. D. Blythe, both of the Gibson Stewart Company.

ENTERTAINMENT

Evening entertainment was deemphasized at this meeting in order to give producers more time to inspect the machinery exhibits, gather together for the mutual exchange of information, and to take in the night-life features which the Cincinnati-Kentucky area has to offer.

A very pleasant feature of the meeting was the annual reception for association members by the Manufacturers Divisions. The buffet, liquid refreshments and music were superlative.

The annual combined luncheon of the two associations was another highlight of the meeting. The speaker was Robert S. Wilson, vice-president of the Goodyear Tire & Rubber Co., whose subject was "Our Dynamic Way of Life." He gave a pep talk on the American way of life and the continued need for pep and progress which was an excellent inspirational message. Mr. Wilson pointed out that ours is a closely-knit and interdependent economy and stressed the need for eternal vigilance that it may survive. He probably coined a new word when he said that Reds are not as dangerous as the "Gulliberals," who are nice people but make ideal and unsuspecting fronts for the real Reds.

ENTERTAINMENT FOR THE LADIES

The feminine bloc attending the National Sand and Gravel Assn. and the National Ready Mixed Concrete Assn. conventions had an opportunity to enjoy Ohio hospitality at its best. Mrs. George Beall, hostess for the Ohio Sand and Gravel Assn. and the Ohio Ready Mixed Concrete Assn., was in charge of three delightful events planned for the visiting ladies.

On Tuesday afternoon the group was entertained at a tea and reception at which badges of identification facilitated informal introductions and conversation.

A get-together luncheon on Wednesday was held in the Continentale Room of the Netherland Plaza, with a large number of women in attendance. Entertainment included orchestra features and the Netherland's famed ice show. Each guest was presented with a beautiful souvenir—a Rookwood pottery vase—by the Ohio associations. After the luncheon many of the ladies enjoyed an afternoon of bridge.

Bright and early—8 a. m.—on Thursday, despite the cold breezes and the snow which had fallen during the night, more than 60 women were waiting at the Netherland Plaza entrance to board two sightseeing buses. The first stop was at the WLW radio broadcasting station, where Ruth Lyons' "Morning Matinee" program was witnessed. At the conclusion of the program those expressing curiosity about the "behind the scenes" activity of a radio station were taken on a tour of WLW.

The next stop was at the conservatory of flowers, where many specimens of rare flowers and plants are cultivated. From the conservatory the route went to a high point of the city—the site of the Rookwood Pottery showrooms and shops. The party was allowed to inspect and admire hundreds of pieces of the famous ware, and were then conducted on a tour through several departments of the pottery works. The visitors watched a workman mold a vase, and saw various ceramic objects being sprayed with glaze in preparation for firing. They also had an opportunity to see the big gas-fired kilns at close range and to watch preparations being made for firing a new batch.

One of the most unusual and thrilling features of the trip followed the visit to the pottery works. The buses were transported down a cliff to the level of the business district, by means of the Mt. Adams inclined (cable) railway. Last on the itinerary was the famous Charles P. Taft museum, home of the late well known Cincinnatian and his wife. The home has become an art museum and contains many costly and beautiful paintings.

Upon arriving at the hotel shortly after noon the enthusiastic sightseers expressed to Mrs. Beall their great satisfaction and pleasure in the trip. They will not soon forget the Cincinnati brand of hospitable friendliness.

Ohio Sand and Gravel Association Meets During National Convention

• Claude L. Clark, secretary of the Ohio Sand and Gravel Assn., makes quite a business of selling a luncheon ticket to C. L. Wade, Brewer & Brewer Sons, Chillicothe, O., while Henry H. Miller of the same company witnesses the transaction.

THE Ohio Sand & Gravel Association held its annual meeting in conjunction with a luncheon on the second day of the National Sand and Gravel Association's gathering. The following new officers were elected to serve for the coming year: Paul Conaway, president, (Brewer & Brewer Sons, Inc., Chillicothe); C. W. Purdy, vice-president (Killbuck Sand & Gravel Co., Killbuck); J. H. Evans, treasurer (Sturm & Dillard Co., Columbus).

Claude T. Clark, executive secretary of the Ohio group, reported to the membership on some of the more significant legislative developments affecting their interests. He made particular reference to the recently enacted Strip Mining Law, the constitutionality of which will shortly be tested in the courts. Mr. Clark pointed out that even though the present law is applicable only to coal mining, it provides an opening wedge in a campaign which might eventually bring the Ohio sand and gravel industry under similar restrictions.

Mr. Clark also mentioned recent changes in the Workmen's Compensation Act, providing generally increased allowances for disability. This trend, the speaker said, makes it additionally important for the industry to study its practices with respect to safety. Mr. Clark cited figures on frequency and severity rates showing that the industry's performance in 1947 was somewhat less favorable than in 1946. According to Mr. Clark, this trend, if continued, offers a serious threat to the premium reductions which the industry has earned in recent years.

Advance in Cement Prices Announced by Three Firms

Three cement companies have increased prices of bulk cement and two others are expected to take similar action soon. Rising production costs and the desire to equalize prices between the East and the West are given as the main reasons for the advance.

Price increases were announced by Lehigh Portland Cement Co., Alpha Portland Cement Co. and Nazareth Cement Co. Bulk rates were raised 15 cents a barrel in the Lehigh and Philadelphia areas and 10 cents in the Hudson Valley and New England areas.

One of three shell loading lines of the Sangamon government ordnance plant near Illiopolis, Ill., recently offered by the War Assets Administration, was sold to the Illiopolis Sand and Gravel Company. The "M" line, comprising 45 acres of land and one building, was acquired by the firm on a bid of $15,250.

Missouri Limestone Producers Enjoy Meeting Held at State Capital

another ON THE SPOT report

APPROXIMATELY 60 persons—members of the Missouri Limestone Producers Association their wives and guests—came from all sections of the state to attend the association's second annual meeting on January 5 at the Hotel Governor in Jefferson City.

By EDWARD BRUNENKANT

Active participation and forthright interest in association activities on the part of each member, plus intelligent leadership, have resulted in multiple advantages for these producers. Under the able managership of Paul N. Doll, the M. L. P. A. has grown, in only 10 months, to the point where its membership represents 65 percent of the limestone production in the state of Missouri. "Our aim in 1948," said Mr. Doll, "is to increase our numbers until our membership represents at least 80 percent of Missouri's limestone production."

Two prominent Missourians—Edward L. Clark, state geologist, and J. W. Burch, director, Agricultural Extension Service, University of Missouri—addressed the group. Both gave excellent presentations.

Dr. Clark's subject was "Missouri Linestone and Dolomites." In nontechnical language, he carefully outlined the geological growth of the limestone deposits in Missouri. Despite the fact that the nonmetallic mineral industry is Missouri's third-largest business (agriculture first; manufacturing second) further expansion is limited because of the

(*Continued on page* 90)

Photograph by G. Massie

• Visiting guests paused a moment to chat with L. W. Hayes, president of the M.L.P.A. From left to right, we identify John C. Kendrich, from the P. and M.A. branch of the U.S. Dept. of Agriculture; Dr. E. L. Clark, state geologist; L. W. Haynes; and J. W. Burch, director of agriculture extension service, U. of Missouri.

• Waiting to be served an excellent meal at the M.L.P.A. luncheon are (from left to right): K. G. Harmon, state conservationist; L. W. Hayes, president, M.L.P.A.; J. W. Burch, director, agriculture extension service; Cora D. Cox, secretary, M.L.P.A.; R. M. Koch, executive secretary of N.A.L.A.; Mrs. A. Alvis, Butler, Mo.; Dr. E. L. Clark, state geologist; Mrs. P. N. Doll, Jefferson City, Mo.; Ben P. Donnell, vice-pres. of M.L.P.A.; Mrs. L. W. Hayes, Kansas City, Mo.; A. R. Alvis, secretary, M.L.P.A.; J. C. Kendrich, P.M.A.; Henry P. Andrae, attorney, M.L.P.A.; and Paul N. Doll, manager of the M.L.P.A.

Photograph by G. Massie

Pennsylvania Stone Producers Sponsor Aggregates Meeting

THE Pennsylvania Stone Producers Ass'n. sponsored the Second Annual Aggregates Meeting for the State of Pennsylvania, in the Penn-Harris Hotel, Harrisburg, Pa., on January 6, 7 and 8, 1948. This association acted as host not only to the aggregate producers, but also to the construction industry and some 40 officials of the Pennsylvania Department of Highways.

The principal topic under discussion was Pennsylvania's 1948 maintenance and construction program. The 1948 requirements of the Pennsylvania Department of Highways represents a very substantial increase over 1947 requirements, at least 25 percent greater. Included are 3,772,536 bbl. of cement, 1,638,434 tons of sand and 9,137,000 tons of coarse aggregates. It is the most comprehensive program in the United States, according to C. H. Buckius, assistant chief engineer. The department gives the Pennsylvania Stone Producers Assn. the credit for making this great program possible.

The principal speakers on the program were Ray Smock, secretary of highways; E. L. Schmidt, chief engineer; C. H. Buckius, assistant chief engineer; A. T. Goldbeck, engineering director of the National Crushed Stone Assn.; Stanton Walker, engineering director of the National Sand & Gravel Association; Fred Hubbard, engineer for the National Slag Association.

The meeting was attended by over 300 and the discussions were enthusiastic and well received. The most controversial subject concerned specifications on flat and elongated particles and their elimination.

Past President John Curtin Sr. retired from active participation in association work, and was succeeded by T. C. McPoyle.

• T. C. McPoyle, newly elected president of the Stone Producers Assn., and John Curtin Sr., past president.

Other officers and members of the board of directors are Paul I. Detwiler, New Enterprise, Pa., vice-president; Ellwood Gilbert, New Castle, Pa., treasurer; W. H. Fehr, Reading, Pa., secretary. H. H. Wagner was re-elected general manager.

• Paul Walker, Chambersburg Stone Co., Chambersburg, Pa.; and Carl Beckler, manager, Stone Sales, Bethlehem Steel Co., Bethlehem, Pa.

The newly-elected board members include the following: J. P. Peacock, Bethlehem, Pa.; H. M. Binkley, East Petersburg, Pa.; W. E. Wilson, Harrisburg, Pa.; S. D. Narehood, Milton, Pa.; Paul Walker, Chambersburg, Pa.; and Charles Coburn, Youngstown, O.

The general manager, Mr. Wagner, announced that a permanent committee will be named from the crushed stone, sand and gravel, slag, bituminous concrete and construction industries, in order to handle future problems.

Pennsylvania Taxing Law Upheld by Supreme Court

The constitutionality of a new Pennsylvania law authorizing certain school districts and the governments of second-class cities and lesser municipal subdivisions to levy taxes not already levied by the state was upheld in an opinion by the Pennsylvania Supreme Court.

Written by Justice Allen M. Stearne, the opinion dismissed a suit which sought to enjoin the School District of Robinson Township, Allegheny County, from collecting a tax of 5 cents a ton on the production of a local coal strip-mining operation. Besides taxing the mining of coal, some taxing districts have used the new law to levy taxes against the quarrying of stone. The petitioners argued that the local taxing authority was an "improper delegation of the legislative taxing power."

The court held, however: "It is really not so much a delegation of power to school districts as a direct assertion of the state's power to tax, enforced by the state's agents."

There is "no doubt of the state's right to tax and . . . there is no doubt of the state's right to confer on the school district, as its agent, the power to levy and collect the tax," the court said.

As to the plaintiff's contention that the tax was discriminatory, the court said that the taxing statute is general throughout the state, except in cities of the first class.

• E. A. Weymouth, Engineer of Sales, Pittsburgh Limestone Corp., Pittsburgh; John Curtin Sr., Warner Co., Bellefonte, Pa.; Nicholas Cascetti, Stowe Trap Rock Co., Oreland, Pa.; W. Vincent Pietsch, Bacon-Pietsch Co., Inc., New York, N. Y.

• W. A. Warrick, chief construction engineer, Pennsylvania Dept. of Highways; A. E. O'Brien, executive secretary, Associated Pennsylvania Constructors; H. H. Wagner, general manager, Pennsylvania Stone Producers Assn.; William Crook, sales manager, The J. E. Baker Co., York, Pa.

Report of Annual N.A.L.A. Meeting

AGSTONE PRODUCERS FROM ALL SECTIONS OF THE COUNTRY MEET WITH THEIR CONGRESSMEN IN WASHINGTON'S HOTEL STATLER TO DISCUSS LONG RANGE CONSERVATION PROGRAMS

By EDWARD BRUNENKANT

another ON THE SPOT report

BY 4:30 p. m. Thursday, January 15, about 221 members and guests of the National Agricultural Limestone Association were tired, happy, and perhaps a trifle relieved that the third in the series of association annual meetings had come to an end.

Each member-producer, however, returning to one of the 35 states represented, would carry back with him a renewed faith in the association and a stronger conviction in the rightness of the association's policies. Two of the eleven policies outlined in their charter granted in 1945, under the Membership Corporations Laws of the State of New York, are: (1) To protect, promote, foster and advance the progress and development of the Agricultural Limestone Industry, and a high standard of business ethics, and a fair and just competitive method among those engaged therein; (2) To encourage and extend scientific research in agriculture, cattle, and poultry raising and animal husbandry, and to cooperate in all fields of allied scientific research which will assist in extending markets for agricultural limestone.

After two years of somewhat hesitant progress, the N.A.L.A. suddenly stepped out. In 1947, the association's small choir of voices (membership grew from 142 in '46 to 262 in '47) was being heard in those congressional quarters where it would do the most good. Much of the success of tuning up the volume of the association's rumbling, and, incidentally, in following so closely the association's chartered purposes, could be laid to the concerted action of a well coordinated Board of Directors. Some, however, must be attributed to the association's executive-secretary, Robert M. Koch. As the industry's only registered lobbyist, Bob Koch was instrumental in "opening the eyes" of those Congressmen who last year voted against the $300 million soil conservation program. His most shocking eye-opener was the farm survey he ran in those Congressional Districts in which lived one or more Congressmen who had voted against the $300 million appropriation. Farmer interest ran high—so high that certain recalcitrant Senators and Representatives were deluged with angry protests over the Congressional cut.

This year it appears that Congressional humor has changed. From the speeches of Senator Aiken, Republican from Vermont, and Representative Stephen Pace, Democrat from Georgia, (both long time supporters of long-range soil conservation programs) there seems every likelihood that the appropriations will soon be upped to the $300 million level (from present $150 million) and, perhaps, to $500 million.

Long-Range Agricultural Planning

It is true, as John M. Deeley, master of ceremonies of the Wednesday after-dinner program, pointed out, "Senator George A. Aiken is favorably known to most agricultural limestone producers," (and just as favorably by the Vermont voters who seem inclined to return him to the Upper House for many terms). "This group," [limestone producers], said the lithe, gray-locked Senator, "will play as important a part in world affairs as any group anywhere in the world." He was referring to America's "calculated" part as international provider in which lime must play a strong supporting role. Lime is needed to replenish the soil which must contribute without failure ever-increasing tonnages of foodstuffs, cotton, and other materials.

By December 31, 1948, thirteen pieces of war legislation will expire. Before some very beneficial farm legislation runs out, said Senator Aiken, it is hoped that both Houses of Congress will approve a long-range agriculture program.

In his tour over the country with other members of the Senate agricul-

• R. M. Seifried (National Lime & Stone Co., Findlay, O.), Sen. George Aiken of Vermont, Rep. Stephen Pace of Georgia, John M. Deely (Lee Lime Corp., Lee, Mass.), H. C. Gray (Standard Paving Co., Tulsa, Okla.), Sen. Ellender of Louisiana, Rep. Anton Johnson of Illinois.

• Richard Mayless (Patterson Limestone Products, New York, N. Y.), H. E. Battin Jr. (Callanan Road Improvement Co., S. Bethlehem, N. Y.), Nicholas Pallette (Pallette Stone Corp., Saratoga Springs, N. Y.), Kenneth Banks (Worlock Stone Co., Tonawanda, N. Y.).

ture committee, the senator from Vermont observed and noted many instances of wornout soil. Our present agricultural program has done great work, he said, but it has only begun. We must increase the use and production of lime for ". . . restoring and maintaining the fertility of the soil begins with the application of limestone."

Farmers have been slowly educated to the value of lime. Concrete evidence that lime is appreciated is borne out by the statistics which show that lime applied to farm lands increased from 2 million tons in 1932 to 29 million tons in 1946. This is a good record but not good enough. Sir John Orr, president of the food and agricultural organization of the United Nations predicts that by 1970 the agricultural production of the world will have to be doubled. If this forecast is true our margin of food production is too narrow.

To the oft debated question of whether or not it is fair to subsidize the farmer and not other individuals or groups in our democratic society, Senator Aiken answered: "It seems to me that we are entitled to give the farmer allowance when he sells the soil, which is capital just as much as we do any other line. The whole public has benefited from this mining of the soil, because it has, in many instances, been able to secure the production for a lower cost than it would have if it had to pay the full cost of depreciation, depletion, cost of production, and so on."

The new long-range agricultural program must be passed in the next few months. It is now or never for as the Senator points out, "it is going to be very difficult to get a good soil conservation program through Congress after election if we cannot get it through before election."

Waste of Basic Wealth Voters from Georgia's third district have sent Stephen Pace to the House of Representatives six times. In the eleven years which Rep. Pace has served his constituents and his country this spare Southern Democrat has become one of the country's most fervent advocates of a federal long-range program. Said the Representative in repeating testimony given before the House sub-committee on agriculture, ". . . if agriculture is the backbone of this country and if we don't continue the farm program, this country is going to have a weak backbone."

The planks in his program for stiffening the country's farm backbone include (1) conservation of soil, (2) adequate support prices, (3) adequate insurance against crop failures, (4) a research program, and (5) moving to the farm the 20th century modern conveniences—rural electrification, sanitation, etc.

As Rep. Pace points out, the most important plank in his agricultural stabilization program is soil conservation. Without it, the rest of the program is meaningless. As the experts told the House Committee—"We have depleted our basic wealth (including soil fertility) faster by far than any nation in history."

Percentage Depletion In the two-day convention many good men had an opportunity to voice their opinions. Dave Davidson, assistant administrator for production P. & M. A., U. S. Dept. of Agriculture, spoke on the Department's recommendations to Congress for long-range agricultural programs. Mr. Davidsoin placed particular emphasis on their recommendations for conservation.

From the same department, Allen W. Manchester, acting director of the Agricultural Conservation Program, gave his views on *The 1948 National Agricultural Conservation Program.* He intimated that there was every possibility of beginning the $300 million conservation program on July 1, 1948, instead of January 1, 1949.

Dr. Robert E. Yoder, principal agronomist, Ohio Agricultural Experiment Station, Wooster, O., showed slide films and elaborated on *Research Results in Use of Agricultural Liming Material.*

But perhaps the hottest issue came up when C. P. Haun, member-producer from Nashville, Tenn., rose in one of the business meetings and said, "Limestone producers have been asleep." He was referring to the omission of limestone products in the 1946 additions to the Percentage Depletion Section of the Revenue Code.

Approximately, percentage depletion is a tax allowance which is computed by taking a fixed (by law) percent of the gross income accrued from the exploitation of minerals. In no instance, however, may any depletion allowance for any one year exceed 50 percent of the net income. For example: A limestone company (if this industry had percentage depletion—which it doesn't) with a gross income of $10,000 could set aside tax free, 15 percent or $1500, provided that their net income was in excess of $3,000. If, however, this same company's net income was only $1,000, they could deduct but 50 percent of this amount or $500 for their depletion reserves.

Depletion allowances are always statutory privileges granted by law and, as such, may be increased, decreased, or taken away by an act of Congress. Percentage depletion is no new concept and is expressly justified in the revenue code because (1) it amortizes the cost of acquisition, (2) it defrays the cost of developments, and (3) it encourages investment and development of properties which are, at best, speculative.

Although many nonmetallic mineral industries (coal, sulphur, fluo-

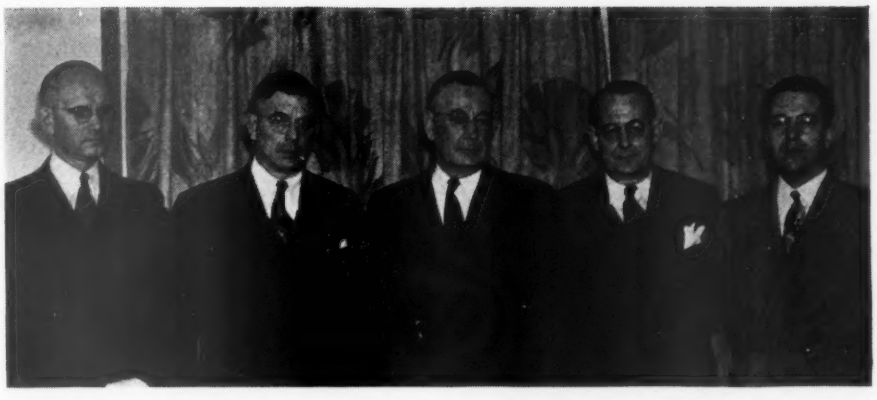
Congressman Stephen Pace of Georgia.

spar, vermiculite, beryl, feldspar, talc, mica, lepidolite, barite, ball and sagger clay, rock asphalt, potash, and a number of others) enjoy percentage depletion, agricultural limestone is not among the group. Perhaps, as Mr. Haun (who heads up a small committee interested in percentage depletion) suggested, the industry did some deep slumbering. Certainly if some types of nonmetallic mineral activity justifies percentage depletion, why not agricultural limestone? At present, the only alternative for tax relief in the limestone industries, and its value is dubious, is the singular privilege of claiming discovery value.

New Board and Officers At the meeting of the Board of Directors new officers were elected. They are: president, H. C. Gray, sec.-treas. of the Standard Paving Co., Tulsa, Okla.; vice-president, John M. Deely, president of the Lee Lime Corp., Lee, Mass.; treasurer, Harry E. Battin Jr., vice-pres. of the Callanan Road Improvement Co., So. Bethlehem, N. Y.; and executive secretary, Robert M. Koch.

Consistent with association policy, new members of the Board of Directors represent as many different sections of the country as possible. New Board members include:

Arthur Alvis, Butler, Mo.
A. R. Armbrust, Fayette Limestone Co., Washington C. H., Ohio.
H. E. Battin Jr., Callanan Road Improvement Co., S. Bethlehem, N. Y.
C. R. Binkley, Binkley Bros., & Ober, Dry Run, Pa.
A. M. Blumer, San Francisco, Calif.
C. A. Broecker, Newton County Stone Co., Kentland, Ind.
W. J. Clark, Munnsville Limestone Corp., Munnsville, N. Y.
J. V. Clisham, The Arundel Corp., Baltimore, Md.
W. H. Cox, Jr., Jesse Allen Lime Co., Nashville, Tenn.
J. M. Deely, Lee Lime Corp., Lee, Mass.
C. W. Duff, Avon Bend Lime Marl, Charles Town, W. Va.
J. W. Etchison, Etchison Stone Co., Casey, Ill.
N. G. Farber, Farber White Limestone Co., Franklin, N. J.
Leonard Fry, Fry Coal & Stone Co., Mercersburg, Pa.
H. C. Gray, Standard Paving Co., Tulsa, Okla.
C. P. Haun, Franklin Limestone Co., Nashville, Tenn.
Earl Heckathorn, Stuntz-Yoeman Co., Inc., Delphi, Ind.



• J. B. Mount (Maymead Lime Co., Shouns, Tenn., director), C. A. Munz (Eastern Rock Products, Inc., Utica, N. Y., outgoing N.A.L.A. president), H. C. Gray (Standard Paving Co., Tulsa, Okla., newly elected president of N.A.L.A.), R. M. Seifried (National Lime & Stone Co., Findlay, O., director), R. M. Koch (Washington, D.C., secretary).

• John M. Deely (Lee Lime Corp., Lee, Mass.), Rep. Talle of Iowa, Ralph Nolan (Nolan Stone Co., Rome, N. Y.).

• The board of directors. Standing: C. W. Duff (Avon Bend Lime Marl, Charles Town, W. Va.), Ralph Nolan (Nolan Stone Co., Rome, N. Y.), M. H. Wurtenberger (Frontier Stone Products, Lockport, N. Y.), Charles Rich (Swanton Lime Works, Swanton, Vt.), Earl Heckathorn (Stuntz-Yeoman, Inc., Delphi, Ind., tallest man in last row), John C. Jeffrey (Parma, Mich.), Richard Mayless (Patterson Limestone Products, New York, N. Y.), H. W. Lamb (Grove City Limestone Co., Brancton, Pa.), N. G. Farber (Farber White Limestone Co., Franklin, N. J.), W. J. Clark (Munnsville Limestone Corp., Munnsville, N. Y.), W. E. Horne (Limestone Products Corp., Newton, N. J.), D. U. Smith (D. U. Smith & Bro., Ashley Falls, Mass.), A. R. Armbrust (Fayette Limestone Co., Washington, C.H., O.).

• Seated: Joe Howard (Ozark, Mo.), J. B. Mount (Maymead Lime Co., Shouns, Tenn.), J. V. Clisham (The Arundel Corp., Baltimore, Md.), C. A. Munz (Eastern Rock Products, Inc., Utica, N. Y.), H. C. Gray (Standard Paving Co., Tulsa, Okla.), E. M. Prettyman (Annville Stone Co., Conshohocken, Pa.), R. M. Seifried (National Lime & Stone Co., Findlay, O.).

W. E. Horne, Limestone Products Corp., Newton, N. J.
Joe Howard, Ozark, Mo.
George D. Jastram, Conklin Limestone Co., Canaan, Conn.
John C. Jeffrey, Parma, Mich.
H. W. Lamb, Grove City Limestone Co., Branchton, Pa.
Edwin Lanning, Lanning Lime Co., Oswego, Kansas.
Richard Lutz, The Lutz Co., Oshkosh, Wis.
D. L. McCullough, Alabama Aggregate Co., Birmingham, Ala.

W. C. Gray, N.A.L.A. president

R. M. Koch, N.A.L.A. executive secretary

Richard Mayless, Patterson Limestone Products Co., New York, N. Y.
J. B. Mount, Maymead Lime Co., Shouns, Tenn.
C. A. Munz, Eastern Rock Products, Inc., Utica, N. Y.
Norbert Neuheisel, Neuheisel Lime Works, Eau Claire, Wis.
Ralph Nolan, Nolan Stone Co., Rome, N. Y.
Joe O'Brien, O'Brien Rock Crusher, St. Paul, Kansas.
Perry Pederson, Pederson Bros., Harmony, Minn.
E. M. Prettyman, Annville Stone Co., Conshohocken, Pa.
Knott Rankin, Rockland-Rockport Lime Co., Inc., Rockland, Maine.
Charles Rich, Swanton Lime Works, Inc., Swanton, Vt.
Fred Roberts, Evans-Roberts, Inc., Norristown, Pa.
B. T. Scharbach, Sand Stone, Inc., Standish, Mich.
R. M. Seifried, National Lime & Stone Co., Findlay, Ohio.
Vincent Shea, Allied Minerals, Inc., W. Chelmsford, Mass.
Dermot Shemwell, Armena Lime Mine & Farms, Inc., Albany, Ga.
D. U. Smith, D. U. Smith & Bro., Ashley Falls, Mass.
E. T. Spidle, Montgomery Limestone Co., Montgomery, Ala.
T. H. Stafford, Vermarco Lime Co., Proctor, Vt.
Paul Thesen, Black White Limestone Co., Quincy, Ill.
M. J. Wurtenberger, Frontier Stone Products, Inc., Lockport, N. Y.

Missouri Limestone Producers

(*From p.* 85)

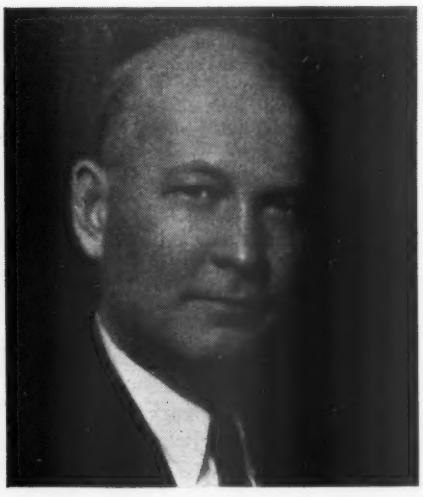
difficulties encountered in locating commercially acceptable quarry sites. Nature was uncharitable in her deposition of limestone throughout Missouri. A large segment, in the North Central part of the state, has only a 6-in. layer of stone which is too shallow to be worked economically.

Missouri's native sons, Dr. Clark said, will be able to boast about the world's largest quarry—nearly ready to begin operations at Cape Girardeau, Mo. Owned by the Solvay Process Co., the new quarry will provide high-calcium limestone for the firm's caustic soda plant at Baton Rouge, La. Present plans call for yearly production of approximately 3,000,000 tons. The stone will be hauled south in company barges.

Dr. Clark pointed out that many limestone producers have hardly realized the significance of the multiple uses of this common material. To help promotion-minded producers find new markets, the state geological department prepared a list indicating 57 different uses of limestone. This list is available to interested persons.

J. W. Burch discussed the importance of optimum soil fertility in the Missouri program of "Balanced Farming." To hold even, Mr. Burch said, at least 4,000,000 tons of agricultural limestone have to be spread each year in Missouri. In 1947, 3,186,000 tons were spread on Missouri farm lands. With a cut in federal appropriations for soil conservation it is increasingly important that limestone producers everywhere help awaken the farmers to the ultimate necessity of "feeding the soil." In the order of their importance, said Mr. Burch, the use of agstone on farms depends upon (1) the income of farmers (2) the AAA, and (3) education. The combination of all three "incentives" has resulted in the farmers using 10 times as much fertilizer in 1947 as in 1937.

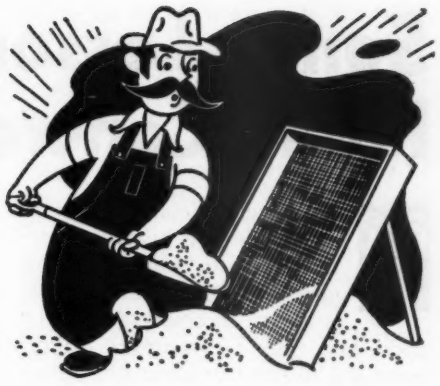
Senator G. A. Aiken



H. E. Battin Jr., N.A.L.A. treasurer

J. M. Deely, N.A.L.A. vice president

Screenings



BY *William M. Avery*

AT this point it seems safe to say that none of the ground rules for conventions which we proposed last month were put into effect at the recent meetings in Cincinnati. So far as we could determine, not one of the speakers was boiled in oil as an expression of protest from his audience, although a few (and we hasten to add, a *very* few) registrants found time during the wee hours to boil *themselves* in various fluids other than petroleum.

Atmospheric conditions in the Pavillion Caprice and other meeting rooms were about on a par with former years, and on the too-infrequent occasions when we stepped outdoors to gulp fresh air, we came back reeling from the impact. Apparently when one has acquired a tolerance for lethal fumes, fresh air becomes tolerable only in small amounts and for very short periods.

Although we neglected to gather statistics on the subject, it seemed to us that more than half the registrants either carried their identification badges in their pockets or contrived to lose them somewhere quite early in the proceedings. This would suggest that the badge system is definitely on the way out, so perhaps between now and the 1949 gathering the associations will give our neon light suggestion the serious attention it merits. We expect at any moment to be called into consultation on this momentous problem.

Crime Symposium

OUR mail has been rather loaded of late with reports of larceny involving the pit and quarry industries. In Pittsburgh the other day a chap was arraigned on a charge of swiping a 30-ft. steel derrick. Seems he dismantled the machine piece by piece in order to sell the parts to a scrap dealer. Probably the only reason the owner hadn't done the same thing was because he'd have chalked up a net loss on the deal. It just goes to show that the small operator still has an important place in our economy.

Another item reports that the Denver police were puzzled by a strange trend of crime which included thefts of 6 sheets of plywood, a fertilizer grinder, a cement mixer and a little red wagon. Not much mystery there so far as we can see. Obviously somebody's getting ready to go into the ready-mixed concrete business on a modest scale.

Our final exhibit concerns the finding of a stolen safe at the bottom of an abandoned quarry near Springfield, New Jersey. In this

instance police were puzzled (apparently a chronic condition among the guardians of the law) as to why the thieves dropped the thing in a quarry of all places. As long as we've got side-tracked into the business of unraveling mysteries, guess we might as well unravel this one. *They dropped the safe into the quarry to bust it open,* you dopes! Next question, please.

Cement in the Mystic Orient

SETH RAMKRISHUA DALMIA, the chap who owns most of India's cement mills, recently became president of that country's "Cow Protection League" after issuing a long-winded statement to the press in which he offered to lay down his life for "this most sacred cause." Among other things, he urged that "people treat the cow and look after it as well as they look after their mothers."

Well now, Seth, it's none of our business, of course, but we don't think that program is going to do the cows much good or help to sell any significant quantity of cement. We don't know too much about India, but over here any man who didn't treat his cows a whale of a lot better than he treated his mother would have the S.P.C.A. on his neck in nothing flat. We think you ought to set your sights considerably higher, Seth, and incidentally try to get cement into the picture somewhere.

Why not, for example, see if you can't get the Hindus interested in precast concrete cows instead of the real thing? Surely the cows couldn't reasonably take offense at that, and they might even be a little flattered. You could paraphrase a somewhat outmoded American slogan, and stump the country shouting, "Two concrete cows in every yard!" You could sell a lot of cement with that program, Seth, and maybe when your countrymen found out about sirloin, porterhouse and T-bone steaks they'd start making statues of you, too—also in concrete, of course.

Soporific Problem

THE accompanying illustration shows three sheep (white circles) and three goats (black circles), distributed alternately in a row of pens.

It is desired to sort out the sheep from the goats, placing the sheep in pens numbered 1, 2, 3 and the goats in 4, 5, 6. The critters must be moved in pairs from adjacent pens to the empty pens, and the order of the pairs may not be reversed in transit; *i.e.* if 5 and 6 are being moved into 7 and 8, we cannot put 5 into 8 while 6 goes into 7.

This utterly useless task can be accomplished in four moves. It helps a little to use one row of a checker board to represent the pens, and 6 checkers (3 white and 3 black) for the live stock. Best feature of the problem: watching the sheep jump from pen to pen is almost sure to put one to sleep. We had six naps before we worked it out.

Some Lessons a Sampler May Learn From Concrete Coarse Aggregates-I

THE term "concrete coarse aggregates" is used synonymously with "mineral aggregates" or "road metal." It is meant to cover crushed or uncrushed rock of whatever origin, processed to meet grading and other

By ERNST W. GREINER

physical specifications. The use of such material for concrete roads and structures by the various agencies of the federal government, by the individual states and by the political subdivisions within the states has led to a multitude of specifications from all these consumers. Then the architects and engineers engaged in all kinds of structural work, from fragile sidewalks to sturdy skyscrapers, all have their pet specifications for gradings of the coarse materials for the concrete to be used therein. Manifestly it can't all be screened or picked over to determine its compliance with the requirements. Some method of sampling must be used, by which a small portion of a truck load, railroad-car load, or barge load may be reasonably certain to carry the size-grading of the large unit represented.

While specifications for coarse aggregates are legion, the methods of taking samples of such materials are relatively few — centering around getting shovelfuls from the surface of, or from trenches dug in, the shipping unit before it is unloaded. The federal government, and the highway officials of the states have undertaken to systematize the sampling procedure; and the American Society for Testing Materials has spoken on the subject. It would seem that the former two, being interested in the use rather than the production of the materials, would by their mandatory methods have pretty well protected themselves, while theA.S.T.M. would have laid down fair rules for the regulation of the producer and the protection of the consumer, or for the restriction of unfair practices of the former and of unjustified complaints by the latter.

The purpose of this article is not to belittle the authoritative efforts of these agencies, but to call attention to weaknesses in the application of the rules they set forth and to suggest points to be observed in sampling practice that will insure greater reliability as to representativeness of the samples taken. The consideration of some of these points should also be of value to the producer in so preparing and loading his material that lack of irregularities will automatically increase the likelihood of the sample selected by the consumer being representative of the mass it is to represent.

This reliability is of consequence to the two parties interested in the sampling project—the producer of the material and the consumer of the material, though these may both be part of the same organization.

First, the producer. The producer must satisfy the consumer. The latter sets the grading requirements and the former must meet them. If all the material sold must go through a 2 in.-square hole and all must be larger than a ½ in.-square hole, the case is simple. A few pieces picked out here and there that will not go through a 2 in.-square hole or that do go through a ½ in.-square hole determine the question of non-compliance. But if 5 percent may be larger than 2 in.-square, and a 2⅛ in.-square hole top screen was used in the plant, it becomes important to establish the high probability of that actual over-2 in.-square value being between 4 percent and 5 percent rather than between 5 percent and 6 percent. Likewise at the lower end a shovelful may show more or less than the allowed 5 percent to pass through a ½ in.-square hole—but are the sizes in that scoopful proportioned to the pile from which it is taken? Will the whole sample serve rightfully to accept or reject the shipment because both ends have, or either end has, not complied with the less-than-5 percent leeway?

The course to be followed by the producer will probably depend on the consumer's expression of satisfaction with the first consignment received. If the material is accepted, the producer will continue to ship like-made material. He will probably not question the reliability of the consumer's routine test results nor critically examine his own plant or his product to determine whether or not the samples are as representative of the product as the consumer thinks they are.

If the consumer complains of the 5 percent being exceeded at either end, the simplest remedy that will satisfy the customer will be resorted to, and plant changes will be made within limits considered practicable or profitable. Until the complaints become a nuisance or threaten the loss of business, the producer sees no reason for increasing his costs by unnecessary changes, or for reducing dividends by expending money on any systematic discriminating plan of sampling the product—unless the selling of a certified superior product appeals to his pride or his business acumen. When rejections threaten loss of money and of contracts, plant sampling of a discriminating type becomes a necessary, though perhaps unwilling, resort.

It is at this point that the too-long delayed interest in sampling not only the final product, but the processing material enroute through the plant, exacts its penalty. And by this urgency the producer learns he has heretofore had need of a critical, observant, painstaking, resourceful, able sampler—a kind of sampling engineer—a man who can do something because he is equipped to apply some thought to what he is doing. The producer will now learn that sampling is not merely having someone obey the order to "get a pailful off of that car;" that not every man who can handle a shovel can proudly be designated as "my sampler;" and that in most cases the rating of the sample is not raised by the assurance that "I took it myself."

In other words, the sampler can be the most valuable asset or agent the plant has in the control of a product. Consumers learn soon to have confidence in a certain product because it has the reputation of being made under processing control and of being loaded into the transportation unit so as to lessen rather than augment previous fluctuations or segregations in size-grading. In watching the processing procedure and the product till the latter is safe aboard the transportation unit, the plant sampler serves not merely the producer's interest in the marketing of specification material; but he serves the consumer by delivering a more uniform product than in many cases the consumer's own samples would indicate he has received. So long as a specification for "thru" a certain size has a band latitude like 30-50 percent, it is unavoidable, un-

fortunately, that a material running 31 percent must be accepted, and 49 percent can't be rejected! These values are, of course, confusing to the engineer calculating his concrete mix when an average ton-by-ton value might hover around the midpoint of the band allowance.

Let's assume a competent person is designated by the producer to learn, by sampling, where and how irregularities in the plant may affect the product to be shipped, and to recommend such improvements in practice as will deliver a product brought not only within the specifications, but which when sampled by the consumer will not vary much from the plant values in grading. The sampler observing the progress of the material going through the plant soon learns that segregations and fluctuations like those indicated above occur on screens or carriers (belts or chutes), sometimes unexpectedly, and call for intelligent, discriminating sampling to determine their extent and possible effect on the product. It is learned from such enroute sampling, among other things, that a "uniformly" loaded belt does not carry the same size grading on the left half as on the right half; that a screen does not uniformly discharge from moment to moment (5-10 seconds) the same size grading of material; that every turn in chutes or on belts in the travel of the material produces more segregation; and that, unless special care is used in running the product into a bin or a shipping unit, there may be taken from the discharge pile innumerable so-called "good average samples" whose sieve analyses won't have much in common. Of the last it is not captiousness to say that a delusive condition to be on guard against is that two "independent" samples agree—whether within or without the specifications.

Since the producer wants to ship material the consumer on *proper* sampling must accept, his own sampler must be alive to the conditions in the processing and loading of the material that may, if uncontrolled, lead to a final rejection. The sampler learns that the discharge from the crusher or from the surge bin is regularly coarser on one side than on the other of the receiving belt or screen. If this discharge is divided to two or more rows of screens the difference in the coarseness of the two feeds is readily noticeable. The failure to give proper attention to this fact has led to the unearned favorable or unfavorable rating in separating efficiency of competitive screens. This is especially true of the lower deck of double-deck or triple-deck screens, because the load on the lower decks is not easily observable. For possible operating value of the sieve test results the product of such screens should be sampled separately, even if they are combined in a single final discharge chute and sampled there. The correlation of these sieve analyses will develop many interesting questions about the separating efficiency of screens.

In this connection the sampler learns that, in spite of an intermediary "surge" bin to even the load on screens, there are still surges on the screens and that the greater volume in these surges does not screen so thoroughly as do the thin loads between the surges. The rated capacity of such a screen may be 100 t.p.h.; but perhaps twice a minute, for five seconds each (about the average travel time on an 8- or 10-foot screen), the surge may be 200 to 500 t.p.h. That mass just won't screen thoroughly and the sampling of the product of several such periods of high surge by the consumer may cause a rejection. If the feed to the screen tends to run down mostly on one side of the screen, even the rated 100 tons won't screen properly and any surge in the load will only aggravate the non-screening trouble, while at the same time part of the screen is bare from not receiving its share of the increased load. Selective sampling of the flow from the screen to catch light loads and surge loads separately would have given warning of that possibility. If the producer's sampler has interest enough in his work to observe and sharply separate samples of such flow-and-ebb conditions occurring on the screen and to bring these conditions and the related sieve test results to his employer's attention, he is rendering his employer a real service. With such information at hand, means may be taken to avoid the dilemmas which it can be foreseen might result from consumers' complaints. A competent sampler should see such things and do some thinking while filling his pails. Of coure, a common laborer could be expected only to fill pails.

The certification of a product as coming within the limits of the specifications presents some peculiar problems for sampling. The samples taken, to permit the product to be shipped, need not be "average" samples. In fact, the acceptability of the product *as made* (*as loaded* will be discussed later) may be determined more certainly not from samples thought to be "average" but from samples purposely made selective and discriminating. Samples disclosing the variation in the size-grading of the product may readily establish the compliance with the limits set by the specifications; and adequate notes written while sam-

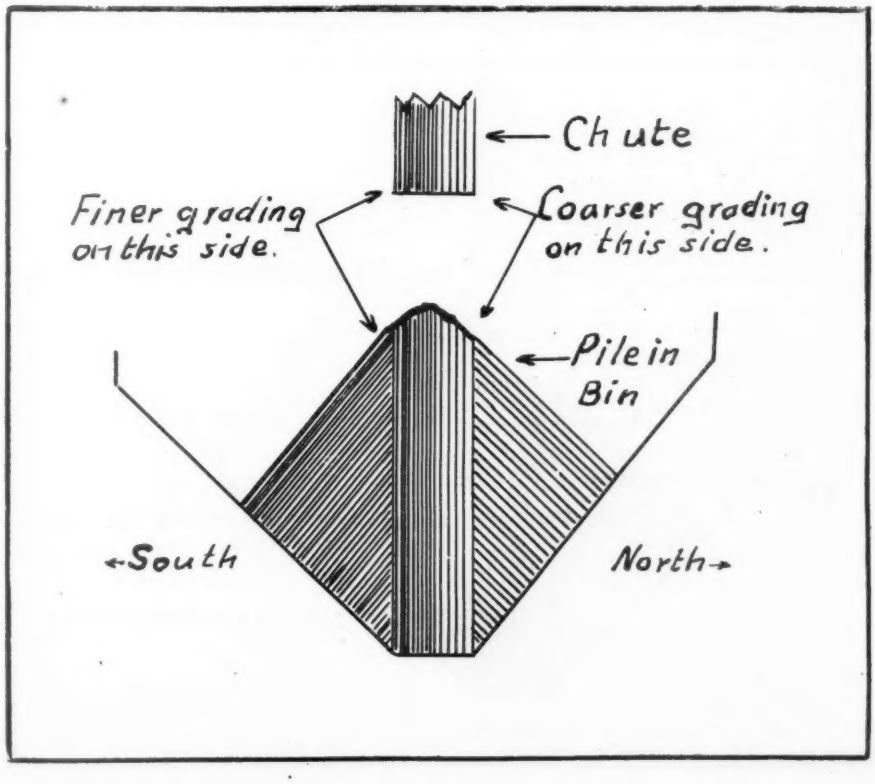


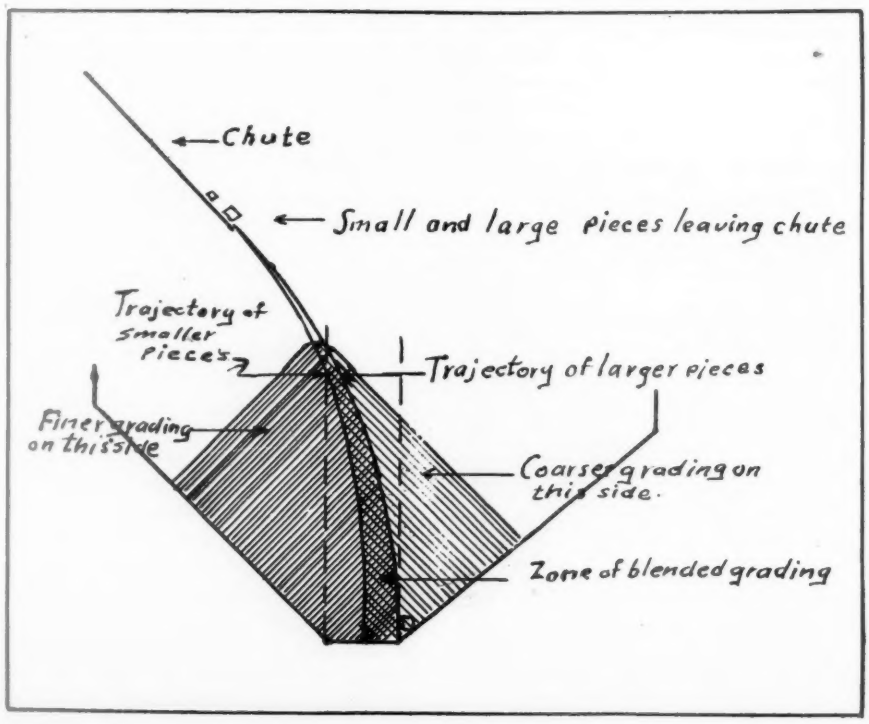
Fig. 1. Difference in grading from side to side of a chute will build a pile about like this—finer on one side, coarser on the other. Samples from both sides may be within the consumer's specifications; but the south side will be at the fine limits while the north side will be at the coarse limits.

pling may give a basis for calculating more reliable average values for the grading of a transportation unit being loaded than might result from numerous samples taken from the loaded shipping units. The most valuable sampling tools a sampler has are his eyes, his practical imagination and a lead pencil. How, when, and where the actual sampling is done become expressions of his ingenuity in using these tools.

If perchance the finished product is run into a bin for temporary storage, it may seem to be a good place to get an average sample. That sounds "reasonable"! Actually a more difficult or unsatisfactory place can hardly be selected. The bin is the grand segregator of sizes and an equally good concealer of subsurface conditions. However the finished product is run into the bin, such side-and-side segregation of sizes as already exists on the chute of the screen becomes fixed in the bin (Fig. 1). Sizes don't cross in a flow. Having no side-to-side motion, they drop as class-conscious as they come down the chute. "Each to his own" is their law of seeking rest in the pile. Also, the coarser stone bounding forward tries to get away from the smaller-sized pieces which more lazily scrape on the surface of the chute and drop with a narrower trajectory on the near side of the pile (Fig. 2). This simple pile-building procedure will, of course, be modified by the presence of an end plate on the chute—but a part of the areal segregation will be determined by the rebound of whatever sizes strike the plate. The resultant conical pile accordingly shows peripheral changes in every foot of elevation, and the taking of a sample from the exposed surface becomes little more than a game of blindman's buff with what is beneath. It is quite evident, accordingly, that any sampling done to ascertain and control the size-grading of the product must be done before the product lands in the bin.

That matter of trajectories, the sampler learns, is a constant thorn in the flesh. The coarser pieces have a more open trajectory, the finer pieces drop more nearly vertically. When the somewhat spread end of the sheet of "overs" from the screen lands on the pile, the coarser portion tends to keep moving or scattering forward while the finer portion tends to stay at the point of impact and then slowly slide down backward, come to rest, and form the slope on which in turn the more newly deposited material will slide down. As can be imagined, samples taken separately forward and backward of the longitudinal middle vertical plane of the pile will show a preponderance respectively of coarser and finer sizes. The producer's sampler is fortunate not to have to sample material lodged in the bins, but to be able to sample it cross-sectionally at the chutes. By no application of mind or magic can he establish with shovelfuls taken from the pile in the bin as high a certainty of the grading of the product as he can establish with scoopfuls taken at the chute.

Fig. 2. "Front" and "back" differences in piles due to the tendency of larger pieces to fall in front of the smaller pieces and to slide away from them on reaching the pile.


Chute
Small and large pieces leaving chute
Trajectory of smaller pieces
Trajectory of larger pieces
Finer grading on this side
Coarser grading on this side.
Zone of blended grading

Incidentally, should our sampler try to verify his previous tests by sampling the discharge from the bin into a shipping unit (car, truck, etc.), he will find himself handicapped by the fact that bins usually are not discharged slowly enough to permit the physical feat of obtaining the samples "from the entire cross section of the flow of material as it is being discharged." (A.S.T.M. D75-46T.) A *cross-sectional* sample is not obtained by merely holding a pail under one part of the downpour. And such a pailful cannot be combined with other pailfuls to make any better average sample than might be had with less labor from the pile in the bin.

Curiosity will result in the sampler's also learning why he can't trust those arduously-obtained samples from the flow from the bins. He decides to watch a bin fill up by standing above it. He is struck at once by the selective piling of the sizes, previously referred to. The screen chute is usually so located that the trajectory of the stone lands the stone as nearly over the bin gate as possible—so as to get the peak of the pile near the center line and thus utilize the full capacity of the bin. The forward - and - backward, and side-and-side segregations build up well-defined masses, merging into each other, but nevertheless well defined. He notices further that, since the coarser and finer portions don't spread and flow or sag to rest uniformly, the pile is lopsided or side-heavy with one or another size, and that the portion of the pile right over the gate is distinctly coarser or finer than what is nearby (Fig. 3).

These observations may seem casually made but will take on sampling significance when he undertakes to take a cross-sectional sample of the flow from the bin or to take a sample from the transporting unit into which the bin is discharged. Continuing to watch, however, he sees that the bin is being emptied. He observes that the pile begins to lower its level *not all over,* as though a little of everything were flowing out, but only directly over the bin door—regardless of whether that door is in the vertical center-line of the bin or off-side. Accordingly, the discharged material is that directly over the bingate and may be segregated coarser or finer material depending on how the segregated sizes built up their respective portions of the pile. He observes further than only after the area the size of the door (assuming the door is clear open) has

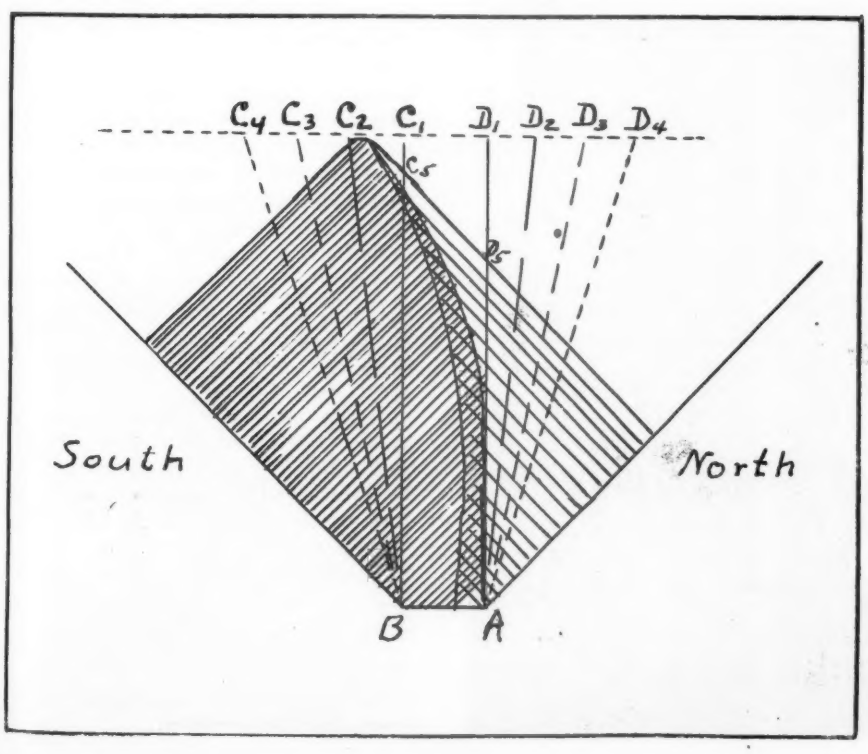
come below the level of the surrounding area does any inflow to the descending column occur from the surrounding area. Even then not all of the slope-stone rolls into the descending column, but mostly the coarser sizes, so that there is now a new segregation taking place, due to the selective flow of materials. As the center column descends, the accumulated finer sizes bedded in the slope are seen to surge down, giving another batch of segregated material to trouble the unsuspecting sampler, who hasn't seen this thing happen. To top it off, these movements all take place in so orderly a way that the sampler watching the gradual lowering of the center of the pile and the funnel-like inflowing of the lengthening sloping sides can pretty well predict just where to look in the car, later, for coarse and fine areas. He also sees that, should he try to take grab-lots of the flow from the bin, he could have no assurance that the single or combined portions would be representative of all that would come through on all sides of the gate during the sampling period. As for cross-sectional sampling of the flow from the gate, gates usually being opened wide to empty the bin and fill the car rapidly, he sees that giving directions is a lot easier than doing the job. It is doubtful that from such a flow the sampler will "obtain samples that will show the true nature and condition of the materials which they represent" even if he succeeds in getting an occasional "entire cross section". He accordingly decides to stick to the chutes and get his control samples by taking slices of the whole flow at a point where every small portion caught must be considered the product of that instant. Fifty such "instant" product-portions have a representative merit not attainable by 50 shovelfuls taken from the pile or by 50 uncertainly timed and spaced cross sections from the heavy flow from the bin.

(To be continued)

Fig. 3. A cross section of the pile in the bin, showing the order of flow through gate AB, assuming the gate to have opened east or west, not north or south. Whatever volume lies on the gate side of BC_1 and AD_1 starts to flow. As the slope-line C_5D_5 sags, stone from BC_1C_2 and AD_1D_2 begins to fall inward at C_5 and D_5. When the lines BC_2 and AD_2 have been reached, the volume in the bin represented by BC_2C_6 and AD_2D_6 begins to flow into the vortex. This volume-order of flow does not depend on the topography of the pile, but depends only on the like angles made by the successive "BC" with BC_1 and the corresponding AD lines with AD_1.

The same order would prevail were the pile leveled at any height from the bin gate. Concrete coarse aggregate is very orderly. It may pack, but it doesn't crowd.

If the gate is opened southward, the stone next to AD_1 will start to flow before the gate has reached B. Conversely, if the gate is opened from B to A, the mass next to BC_1 starts flowing, while that near AD_1 awaits its later turn.



Plans for the construction of a new temporary office, sales and service building for the Washington Brick & Lime Company, Spokane, Wash., have been announced by the firm's executives. Approximate cast of the new structure, which will replace the present headquarters, will be $35,000.

Industrial Explosives Output In 1946 Shows Rising Trend

Consumption of industrial explosives in the United States during 1946 advanced to a total of 536,314,652 pounds which was 17 percent greater than in 1945, according to the U. S. Bureau of Mines. This gain in 1946 reversed the slow downtrend which started in 1943 and persisted through 1945. Consumption in 1946 was greater than in any other year since 1920 and was the third largest annual poundage on record.

The 17-percent gain over the 1945 consumption resulted from increased sales of permissible explosives and of high explosives other than permissibles which gained respectively 3 and 24 percent in 1946. The increased sales of permissibles was due in large part to the sharp gain in use of this type of explosive in the anthracite mines of Pennsylvania. The gain in consumption of high explosives other than permissibles resulted from greatly increased demand for all uses except metal mining, in which consumption decreased moderately. Consumption of black powder in 1946 declined slightly from 1945 owing to decreased use of pellet powder, which was only partly compensated for by slightly increased consumption of granular black blasting powder.

The coal mining industry in 1946, as in 1945, was the largest consumer of each type of explosive. It alone consumed 45 percent of all industrial explosives used in the country in 1946. Bituminous coal mines consumed 34 percent and anthracite mines 11 percent of the total 1946 sales of explosives. Of the 240,115,239 pounds used in 1946 to mine coal, 45 percent represented high explosives other than permissible, 41 percent permissibles, and 14 percent black blasting powder.

The demand for explosives by the metal mining industry continued to decline, and 8 percent less explosives were used in 1946 than in 1945. Virtually all explosives used in metal mines are of the high explosive other than permissible type.

Quarries and nonmetal mines used 39 percent more explosives in 1946 than in 1945, owing to the strong demand for products of these operations in construction work and in the extensive road building programs. Over 96 percent of the explosives used in the quarries and nonmetal mines were high explosives other than permissibles. Consumption of high explosives other than permissibles in railway and other construction work gained 55 percent in 1946.

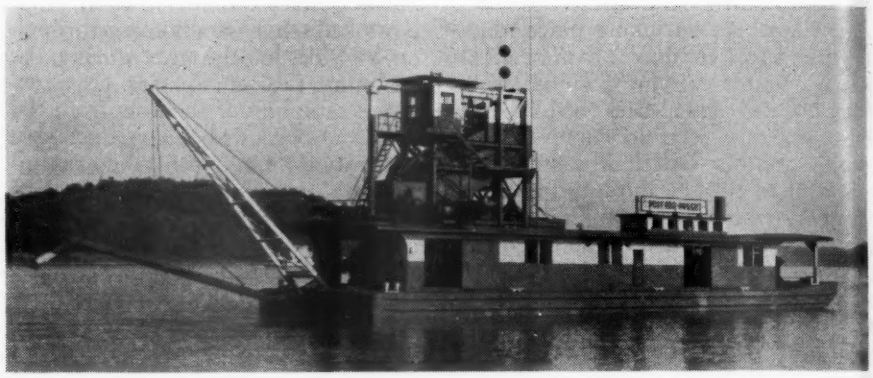
Two pieces of equipment owned by the Ohio River Dredging Company, Huntington, W. Va., were recently sunk in the Ohio River. A digger sank with seven men aboard, all of whom escaped to safety. Near Miller, O., the firm lost a fuel flat, the *Slack Barrett*. Both were salvaged by the Marine Diving Service of Memphis, Tenn.

Evansville Sand-Gravel Producers Use Diesel-Electric Dredge for River Work

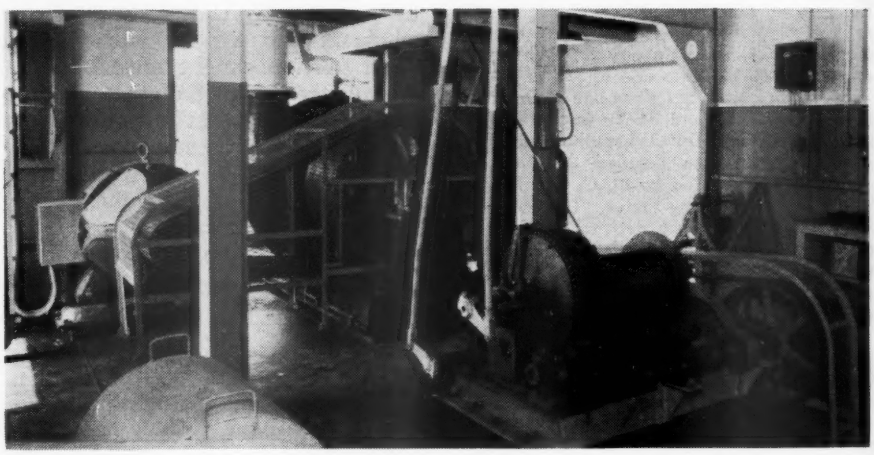
THE Marine Division of the Maxon Construction Company, Inc., of Tell City, Ind., recently completed an all-diesel-electric-powered hydraulic dredge for the Bedford-Nugent Co. of Evansville, Ind.

The hull is of all-welded steel design, 110 by 28 by 6 ft., housing the main fuel tanks of approximately 16,500 gallons. The main deck is divided into three sections—the stern section containing the main engines, generators, compressors, switch gear and anchor hoist; the center section containing galley and crew quarters; and the bow section containing the main pumps and suction hoist. The control house, the shaker screen, the chutes and the conveyors are all mounted on the roof of the main deck house.

The dredge is electrically powered by a 450-hp., Model DSG6 diesel engine by Enterprise Engine and Foundry Co., driving a 250-kw., 450-r.p.m., 110/240-volt generator by Elliott Co. The auxiliary generator is a 20-kw. Delco generator, Model I-3650, driven by a Hill diesel 4-cycle engine. The compressor used is a Quincy 3½- by 2- by 2½-in. equipped with both electric and gasoline motor drive. The main 12-inch suction pump is as manufactured by F. Holtz & Co., with a 200-hp. Westinghouse d.-c. motor as its driving power.



• The new diesel-electric-powered dredge recently put into service by the Bedford-Nugent Company, Evansville, Ind.



• A view of the bow section of the main deck, showing the suction hoist (right) and the main pump (left background).

All sand and gravel is obtained through suction and processed through a shaker screen furnished by Simplicity Engineering Co. The gravel is loaded into barges by two Barber-Greene motor-driven portable belt conveyors, all sand being loaded by chutes. All chutes are hinged and operated by hand-powered winches along with the conveyors, which are retractable. The main suction is raised and lowered by an electric-driven hoist, single drum 23½- by 12-in. The main source of water is obtained by a 6-in. centrifugal pump powered by a 25-hp. d.-c. motor. The pressure water system for the dredge is produced by a Yeomans Brothers pump, S. O. No. 1301RM, driven by a ½-hp. d.-c. motor; the water is filtered by a No. 2 Bowden single-valve

(*Continued on page* 98)

• The control house, showing the shaker screen, chute and conveyor.

MODERNIZATION PLAN AT AUBURN LIME AIMS AT HIGH PRODUCTION STANDARDS

another ON THE SPOT report

WHEN the Auburn Lime Products Co. finishes the proposed installation of modern hydrating and pulverizing facilities at its plant, located close by the American River south of Auburn, Calif., a few months hence, it will have completed a modernization program that will place the plant in the front rank of Pacific Coast lime production operations.

By HARRY F. UTLEY

Although lime has been calcined at the site for about 70 years, it has been only in the last year or two that modern facilities have been placed in service to assure quality and uniformity of output. Rail facilities are still lacking, the output now being trucked over surfaced roads to the rail head about 7 miles distant. In the early days when wood was used to fuel the crude kilns, the ruins of one of which may still be seen near the present plant, the lime was packed out in cowhide bags by horse and mule trains over the rough mountain trails.

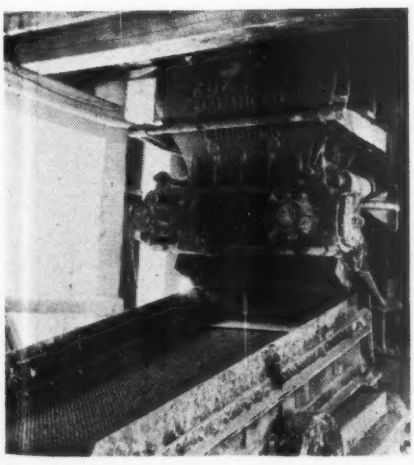
The plant and deposit were acquired in 1945 by a new organization headed by State Senator Fred Weybret of Monterey County and the modernization program launched. This included the installation of a rotary kiln with preheater, and new crushing, screening, and storage facilities.

While the deposit is a high-grade, high-calcium limestone it, curiously, is not being worked to any extent at present, the owners choosing to buy raw material from the quarry operated by the California Rock & Gravel Co. of San Francisco, which is located about eight miles to the east. This quarry produces "sugar rock" exclusively for California refineries, shipping the material in lumps from 2 to 6 in. in size to conform with refinery requirements. As a result, the finer material, minus 2 in., is waste for its primary purpose as sugar rock, but ideal for calcining in a rotary kiln. The Auburn plant management is, therefore, able to purchase it at a cost comparable with what it would be if it were quarried and broken down at its own deposit. It is brought to the plant by Chevrolet trucks in 6½-ton loads. A typical analysis of the stone is as follows:

SiO_2	.50	percent
Al_2O_3	.26	percent
Fe_2O_3	.12	percent
Mn_3O_4	0	percent
MgO	.45	percent
$CaCO_3$	98.80	percent
Total	100.13	percent

The stone trucks ascend an incline at the Auburn plant and discharge to a hopper which feeds a Straub Mfg. Co. 10- by 24-in. Kue-Ken balanced-jaw crusher driven by a 40-hp. motor. The machine reduces the stone to about 1-in. minus and it passes by gravity chute to an Allis-Chalmers 3- by 6-ft. vibrating screen which takes out the fines. These fines are not calcined normally, consisting of minus ¼-in. material which is utilized in the grit-and-flour department of the plant. The screen rejects make up the feed for the rotary kiln.

• A general view of structures at the Auburn Lime Products Company's plant at Auburn, Calif. At the left is the stone products department; at the right in the background, the lime storage silo.



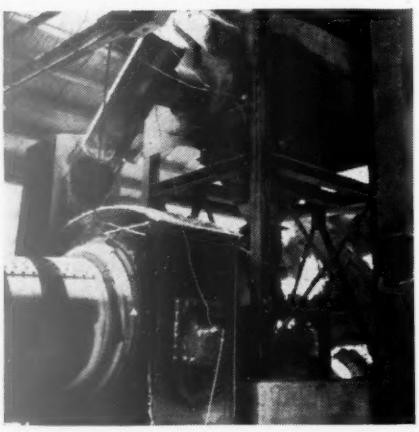
• The crusher which reduces the stone to kiln size at a single pass, with the screen in the foreground.

The kiln-feed stone, in a size range of about 1 to ¼ in., is elevated to bins which feed the Lintz preheater ahead of the kiln. The preheater consists of a refractory-lined steel tank equipped with pipe baffles taking the full volume of waste-heat exhausted from the kiln to preheat the stone. The stone moves downward through the preheater by gravity, countering the hot gases which enter at a temperature close to 1,500 deg. F., and are exhausted by a fan at the top of the preheater at approximately 400 deg. F. It requires from 1 to 1½ hrs. for the stone to pass through the preheater, the hot stone being fed directly into the rotary kiln by a fully-enclosed and insulated shaker feeder.

The H. W. Gould kiln, originally used in the production of mercury from cinnabar ores, is 4 ft. in diameter and 60 ft. long. Despite its shortness, it is doing an economical job, since the hot exhaust gases are almost completely utilized in the preheater. Production has been running about 28 tons of lime in a 24-hr. operation. The kiln is lined with high-alumina brick and is oil-fired

by a Pan-American burner. Tidewater Associated Hi-Visc fuel oil is used, the oil first being heated before it reaches the burner. The kiln is driven by a 5-hp. motor through a Foote variable speed-reducer, kiln speed ranging from 2½ to 5 r.p.m., depending upon the size and character of the feed.

From the kiln the hot lime drops to a Gould 5- by 20-ft. rotary cooler arranged in line with the kiln, the cooled lime falling to a surge pit below ground level. The bin feeds, via short screw conveyor, a 40-ft. bucket elevator which lifts the lime to an Allis-Chalmers triple-deck screen located above the cylindrical 4-compartment concrete-stave storage silo. The screen separates the lime into plus ½-in., minus ½-in. plus 10-mesh; minus 10- plus 16-mesh; and minus 16-mesh particles, spouting the products into the four silo compartments, each of which has a capacity of about 50 tons of lime. A small Dixie hammermill in closed circuit can reduce the two larger sizes still further if desired. A short horizontal belt conveyor beneath the bin can load bulk lime into trucks, or the output may be sacked by a portable Vreedenburg valve bagger in the case of the fine lime, or in wire-tied open-mouth bags for the lump lime, the bags being weighed on an Exact Weight scale.



The grit-and-stone-flour department has a capacity of about 150 tons per day and is supplied with the minus ¼-in. stone passing the screen, mentioned earlier, which follows the Kue-Ken crusher. The material at present is being trucked over, the system to be replaced later by a conveyor. A 40-ton bin feeds a Dixie hammermill and separation is accomplished over Hum-mer and Allis-Chalmers screens which make five separate products ranging from 28-mesh to minus ¼-in. These are classified as (1) "flour", (2) fine chicken grits, (3) medium chicken grits, (4) coarse chicken grits, and (5) turkey grits. The hammermill and screens are connected to a Rees cyclone collector to recover the dust. The various products are stored in bins and packed in 100-lb. paper bags for shipment. The bagged lime and stone products are palleted and handled in the warehouse by a Towmotor fork-lift truck. The lime is marketed under the "Auburn" brand; the stone products as "Alpco", the name being coined from the initial letters in the company name.

The plant employs about 15 workers. George L. Kelly is manager, and Ray Webber is superintendent. Mr. Kelly assumed charge of the operations in December, 1946. Formerly he was with the Henry J. Kaiser organization in a supervisory capacity, both at the magnesium works of the Permanente Metals Co. and at the lime and dolomite plant at Natividad, Calif.

• Left: The preheater, showing the exhaust gas connection from the hooded feed end of the rotary kiln.

• Below, left: The 4- by 60-ft. rotary kiln, looking toward the preheater at the feed end, in the background.

• Below, right: The rotary lime cooler from the discharge end. The lift-truck in the foreground handles palleted filled bags.

Evansville Producer

(*From p.* 96)

quartz filter. The main switchgear for both diesel engines was manufactured by William Wurdack Electric Co.

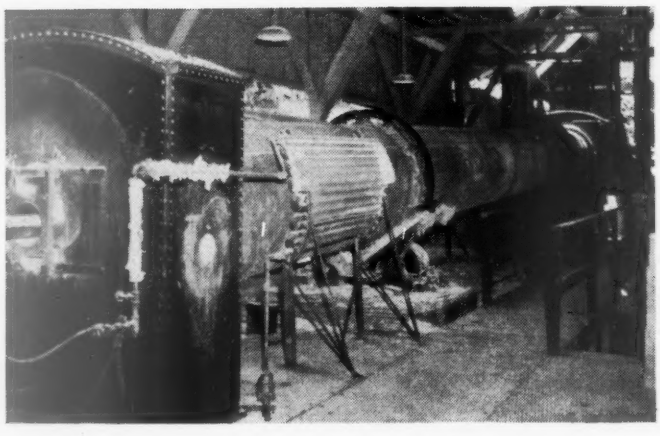
The crew quarters are modern in all respects, having sleeping capacity for seven men, showers, lavatories, lockers, etc. Ventilation is provided by steel windows and exhaust fans. Floors are covered with inlaid linoleum and walls insulated with 1 in. Fiberglas.

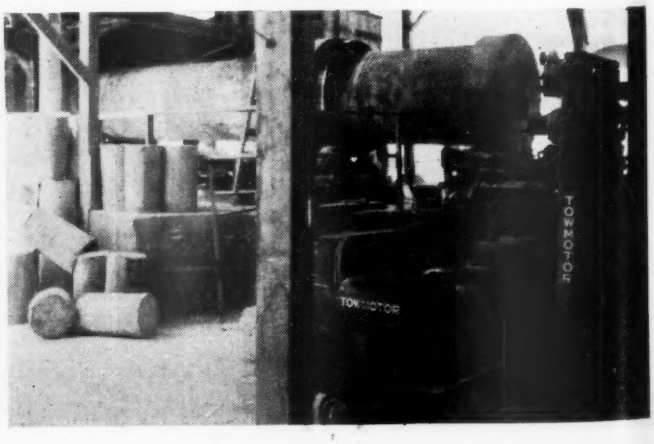
The galley, like the crew quarters, is all insulated; it is complete with Servel refrigeration, gas stove, sinks, cabinets and exhaust fans.

On September 5, 1947, the final operating tests were performed in the presence of James Nugent Sr., his son James Nugent Jr., and their operating crew. This dredge is now producing sand and gravel in the Ohio River between Rockport and Grandview, Ind.

A person operating gravel pits on a farm and obtaining the greater share of his living from that operation in Nebraska is subject to the state's commercial license requirements, according to an opinion written by C. S. Beck, deputy attorney general of Nebraska. He stated that "the fact that a person lives on a farm, that is, acreage outside the limits of a municipality, does not in and of itself constitute him a farmer within the meaning of the exemption clause of the statute...It is his *chief* occupation, which is controlling . . ."

A group of mica claims in the Retaco district of New Mexico have been purchased by the Rubber Asphalt Co. of Los Angeles for a reported consideration of $80,000. According to M. A. Beinhard, president, a $50,000 plant will be erected there for milling and processing the mica.





THE LIME PLANT OPERATOR

By WOLF G. BAUER
Consulting Engineer

NATURE, CONTROL, AND INFLUENCE OF FLAMES IN LIME BURNING

Part VI. Rotary Kiln Flame Manipulation

another P and Q exclusive

DURING our study of flame structure and its variations with velocity, turbulency, and primary air-fuel ratio, it was shown that diffusion burning is of great value in rotary kiln lime burning. The obtainment of mild, luminous and long flames is not so difficult with certain fuels such as natural or producer gas, but more of a problem with oil or pulverized fuel.

Producer Gas With producer gas, the large volume of the fuel stream is only slowly penetrated by the secondary air, especially as the gas velocity is relatively low, and turbulency is not pronounced. Hence, the older practice of gasifying coal achieved a milder and lower temperature flame condition in the kiln. In shaft kilns, high turbulency and higher air preheat has generally given just the reverse effect, and can only be modified and inhibited by re-cycling some of the hot waste gases from the kiln.

Natural Gas Despite the many fancy and complicated burners used, the function of which is to mix or inspirate primary air for the burner nozzles, the simplest and safest burner is the plain pipe (or pipes) carrying 100 percent undiluted gas. With such "burners" no flash-back can possibly occur, the gas velocity at the nozzle tip or in the gas pipes can be made any value and to suit flame structure requirements, and all combustion air can be applied at high pre-heat. It is obviously a simple matter with this fuel to arrange the burner system for radiant diffusion flames by providing an envelope of air around the gas stream at similar direction and gas velocities, and with minimum turbulency, especially as it is not difficult to employ a number of burners. In this connection it should be kept in mind that the same volume of gas issuing from many small burners will produce a shorter compound flame than the single-stream burner flame. However, since the rotary kiln does not foster thorough mixing of gas streams, several burners arranged for diffusion mixing constitute a better arrangement than a single flame stream which may allow unburned gases to escape.

Wolf G. Bauer

Oil Although steam-atomizing burners are simple and produce probably a somewhat lower flame temperature, the use of steam is not efficient when it must be generated solely for atomizing. Many of the latest low-air-pressure-type burners are designed to use only very little primary or atomizing air, 15 percent or less; and so most of the combustion air can still be employed as secondary air. Whereas gas flames shorten with increased velocity past a certain value, this is not quite the case with oil. With heavy oil atomized with minimum turbulency, the flame length is also a function of the time necessary to vaporize the liquid.

Pulverized Coal The length of a pulverized coal flame, unlike a gas flame, is a function of the fuel stream velocity, the maximum particle size, and the amount of primary carrying air. One of the obvious faults of the common rotary kiln burner is, therefore, the inability to hold the flame length constant when fuel input to the kiln is varied with burning requirements. This common shortcoming causes the heat to be shifted back up the kiln with increased fuel-air input, rather than bringing about a higher heat release in the fixed calcination zone. One suggested way

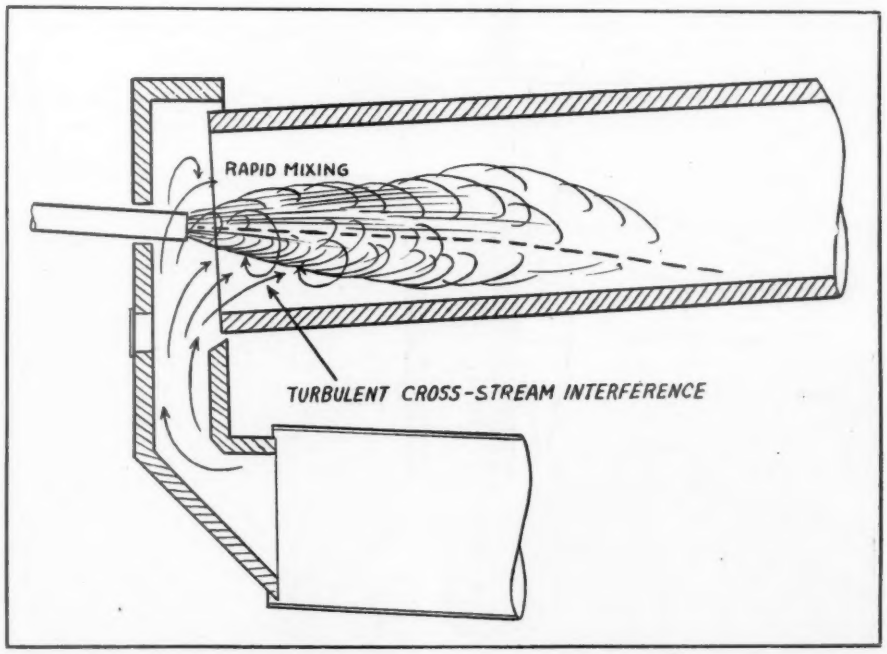


Fig. 1. When the fuel-air stream is not surrounded by a uniform parallel secondary air stream, considerable turbulency is caused.

to improve this condition of variable fuel stream velocity is to incorporate into the burner pipe one or two small additional longitudinal ducts or pipe that can be opened up to the coal-air stream when an increase is called for, thereby bringing the lineal velocity back to the original value. Another way is to use two burners of unequal size, the larger one to supply a constant stream into the kiln, while the smaller one is put on or taken off as heat is demanded. Thus the shifting of the hot zone is less pronounced with fuel input changes. Figure 3 shows a suggested arrangement of a burner pipe enclosing an interior smaller auxiliary pipe. This position keeps the small pipe cool when not in operation.

The cross section of the fuel-air stream at the kiln entry point is only about 1/10 of the flow area of secondary air. On the assumption that secondary air is twice the mass of the fuel stream, the latter is at least five times the velocity of the air. Since no actual attempt is made to create a venturi effect, no injection force is created to pull secondary air in behind the fuel stream. However, a differential air-fuel velocity of 5 : 1 causes considerable turbulency, especially so when the fuel-air stream is not surrounded by a uniform parallel secondary air stream. Fig. 1 portrays this condition, while Fig. 2 and Fig. 4 indicate suggested rearrangements for high temperature air preheat and decreased turbulency and velocity differences.

When hot air from the lime cooler, be that a rotary or a blast cooler, is introduced close to and around the burner and flame, it must be reasonably free of dust. High dust concentration impairs the flame luminosity as well as the rate of combustion. Efficient high temperature cyclones help to minimize these effects, while indirect cooling of lime in the high-heat state will provide completely clean air, but at some loss in heat recovery.

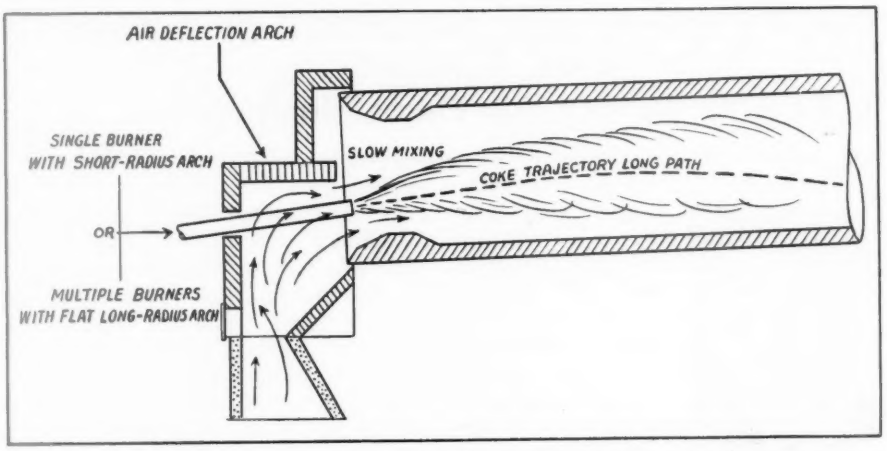


Fig. 2. Suggested luminous-firing with dusty hot air.

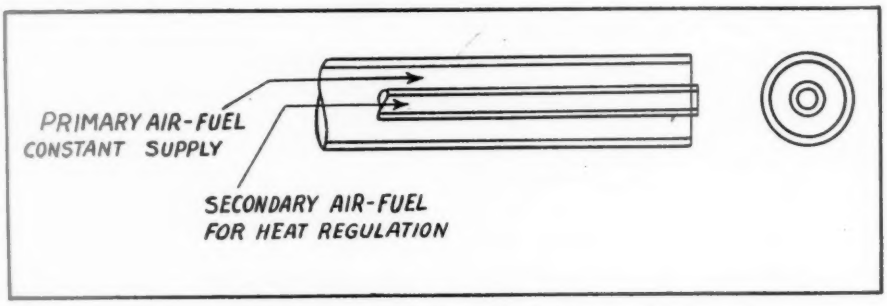


Fig. 3. Constant velocity pulverized fuel nozzle.

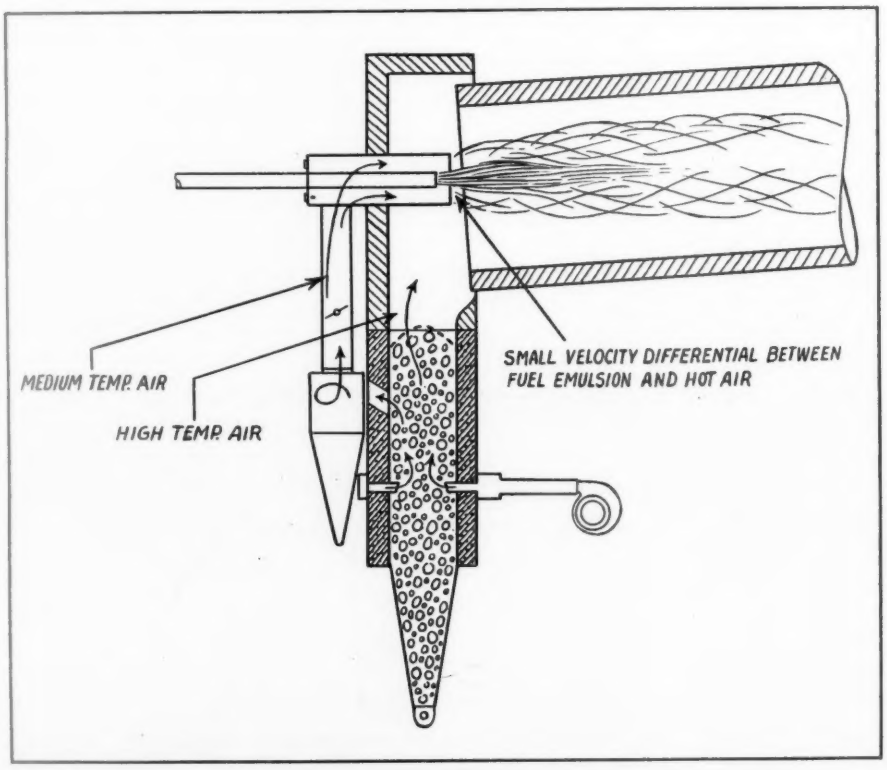


Fig. 4. Luminous burner with low-dust hot air supply.

Kentucky Firm to Resume Operation of High-Test Bed

After being abandoned more than 40 years ago, a limestone bed near Ullin, Ill., soon will be worked by Nally & Ballard Inc., of Bardstown, Ky. This firm has leased the old quarry and an 80-acre lime deposit adjoining it for the purpose of mining the almost pure lime rock found there.

The original pit, abandoned in 1906 after blasting had opened a spring which eventually caused it to become filled with water, will not be drained. The new operation will begin about 100 yards south of the old quarry, and production is expected to begin in the near future. Members of the new corporation estimated that the supply of limestone, which yielded tests of 97½ and 98 percent pure, is "practically endless."

Supervising the operation at Ullin will be the following: Virgil Hall, superintendent; Melvin Fuel, explosives expert; and Crit Howard, in charge of drilling.

Tom Sanders has announced the sale of his interest in the Sanders & Wood Lime Company, distributors of agricultural limestone, to Buford and Virgil Wood, Holdenville, Okla.

Shielded Arc Equipment Used To Repair Cracks in Kiln Tire

A completely successful welding repair of fine cracks on the center tire of a kiln has been reported at the lime and magnesia plant of the Aluminum Co. of Canada, Ltd., Wakefield, Que., Canada.

With the use of shielded arc equipment manufactured by The Lincoln Electric Co., Cleveland, O., cracks so fine that the insertion of a feeler gauge was impossible, have been closed without discernible weakness to the tire.

One crack extended through the flange and branched into the web on the cold or upper side of the tire. In addition, a hair crack was observed on the opposite flange and web on the hot side of the tire. No crack appeared on the working surface of the tire, although a blow hole in the metal was noticed on the face of the tire adjacent to the upper or cold side edge, as illustrated in Fig. 1. Despite the fact that successful repair was considered extremely doubtful, it was decided to try electric welding.

Preliminary to welding operations, a pneumatic tool was used to chip out the cracks in the flanges, thus leaving a combined angle of 60 degrees for the weld metal.

The sides of the tire at right angles to the shell were found to be too hard to chip out with the tools available and the position of the cracks made it impossible to make a satisfactory beveling job without special tools.

Holes, $\frac{5}{8}$-in. in diameter, were drilled beyond the ends of the cracks, (Fig. 2). This permitted the use of a cutting torch for beveling. Starting at a drilled hole, a cut was made through the crack and the sides were then beveled to 30 degrees, which produced a combined angle of 60 degrees for welding.

The complete beveled area was then chipped out thoroughly with the pneumatic tool to remove all slag and expose bright metal to insure maximum bond for weld metal.

With the use of oxy-acetylene torches with No. 11 tips, the tire was heated as uniformly as possible for about one foot on each side of the cracks. The temperature was kept under constant check with Tempilstiks. It required about one hour of preheating to raise the temperature to 400 deg. F. Figs. 2 and 3 show the prepared cracks for welding and the section of the kiln tire which was preheated.

It was highly important in the welding operation to maintain proper "root penetration" at all times. In several places the cracks were too wide to bridge over satisfactorily with weld metal. This situation was remedied by tacking in ½-in. by ¼-in. backing strips. The cracks in the flanges were on a tire shim block on each side. The root penetration at these points was right into the blocks. In other words, the flanges of the tire were actually welded to these riveted blocks.

"Stainweld A-5" in the $\frac{5}{32}$-in. size was used in the welding operation, the total job requiring about fifteen pounds. This is a shielded arc electrode which produces dense, corrosion-resistant welds and protects against impact and abrasion.

Vertical welding was started on the face of the tire at right angles to the kiln shell, and after each pass the weld deposit was slagged and lightly peened with an air chipper. It required approximately five passes to fill the right-angle face on the upper or cold end of the kiln. The wall thickness on this side was one inch. Current supplied by the welding machine was set at 180 amperes and 40 volts.

Using the same setting on the welding machine, eight passes were required on the lower right-angle face where the thickness of the metal was 1½ inches. Throughout the entire welding a constant check was kept on the temperature of the preheated areas to guarantee its maintenance at 400 deg.

When the two welds on the web of the tire were completed, the kiln was rolled over so that the cracks were directly on the top center of the kiln. The flange welding was then completed in a downhand position, ten passes being required to fill in each side. The entire welding job consumed about eight hours, with two men alternating.

After its completion, a reheat to a temperature of better than 400 deg. F. was given to the weld, and the preheated area was then covered with an asbestos blanket to allow for slow cooling. In about seven hours the tire was cool enough to touch by hand.

The weld deposits and adjoining areas were smooth and durable, with no cracks apparent. The welds on the flanges of the tire were dressed smooth with a portable grinder. All reports on the welding repair job since its completion indicate that long and uninterrupted serviceability is anticipated.

Fig. 1.

Fig. 2.

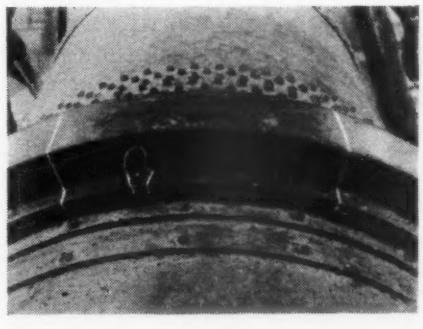


Fig. 3.

Favorable Prospect Seen for Island Phosphate Production

Progress in reconstruction activities on Nauru and Ocean islands has been so rapid that it is expected these islands will be able to produce nearly 600,000 tons of phosphate fertilizer during the next 12 months.

It is estimated that the two islands will contain approximately 87,000,000 tons of the material. Christmas Island, which did not suffer the severe damage from bombings visited upon Nauru, has a deposit of about 25,000,000 tons, while the French island of Makatea has about 4,000,000 tons left. The Japanese have been permitted to mine phosphate at Angaur Island in the Pelew group, where deposits are small and of minor importance.

On Nauru severe bombing damage had been caused to the oil tanks and the special cantilever loading plant which could load a 10,000-ton ship in a day. The purpose of the Allied bombing was to prevent the enemy from obtaining phosphate, even though Australia had to go without, as well.

By the middle of 1945 large stores of equipment had been assembled in Melbourne for shipment to the island plants for their restoration. The first shipments from the rebuilt facilities arrived in Australia the following year. It is hoped that within three years the annual output will be 1,000,000 tons.

Many Ohio River towboats are reported moving tows of fluorspar. Among these is the *Frank C. Rand,* a new boat owned by the Mississippi Valley Barge Line.

PERSONAL MENTION

MELVIN H. BAKER, president of the National Gypsum Company, is among 28 members of a national committee to lead a public campaign to reduce accidents. The National Safety Council is sponsoring the drive.

N. A. Holmer

N. A. HOLMER, vice-president and sales manager of the Carney Company, Inc., of Mankato, Minn., was re-elected president of the Industrial Mineral Wool Institute, an international organization representing manufacturers of industrial insulation, at the group's annual meeting in New York.

Also elected to the board of directors was W. H. HILL, president of the Baldwin-Hill Co., Trenton, N. J.

DR. FIRMAN E. BEAR, chairman of the Soils Department, New Jersey Agricultural Experiment Station, and DR. WILLEM RUDOLFS, chairman of the Department of Water Supply and Sewage Disposal, Rutgers University, were recently honored by fellow members of the American Chemical Society (Chicago Section). These two were named among the ten foremost chemists and/or chemical engineers in the United States as the result of a poll to select outstanding representatives in 20 specific fields.

VICE ADMIRAL GEORGE F. HUSSEY, JR., USN (Ret.), wartime Chief of the Navy's Bureau of Ordnance, has joined the staff of the American Standards Association and on January 1 assumed the duties as administrative head of that organization. In this capacity Admiral Hussey will continue to serve the nation by directing the cooperative efforts of industry, consumers and government in the vital problem of standardization.

CYRIL AINSWORTH, who for a number of years has been in charge of the technical activities of the ASA, will serve with Vice Admiral Hussey as director of operations of the ASA staff.

GARRETT L. WITHERS has been appointed by Gov. Earle C. Clements to succeed J. Stephen Watkins as Kentucky state commissioner of highways.

An attorney of Dixon, Ky., Mr. Withers is a former member of Kentucky's old nine-member highway commission. He also has served as Webster circuit clerk, county attorney, master commissioner, and as a federal referee in bankruptcy.

VANCE N. WILSON has been appointed safety co-ordinator for the Pennsylvania Salt Manufacturing Company, it was announced by Frederick C. Abbott, manager of personnel and labor relations.

Mr. Wilson joined Pennsalt in February, 1941. He served in the United States Navy from 1942 until 1946. Upon his return to Pennsalt in June, 1946, he was named supervisor in charge of tank cars in the traffic department.

JAMES V. DAILEY has been appointed superintendent of the Medusa Portland Cement Company's mill at Manitowoc, Wis. He succeeds F. E. Town, who died recently.

DAVID G. WYLIE, president of the Bloomington Limestone Co., Bloomington, Ind., who recently was elected president of the Indiana State Chamber of Commerce, was guest of honor at a dinner given on December 2 by Bloomington business and civic leaders.

WARREN LEWIS has been named president of the Longview-Saginaw Lime Works, Inc., Birmingham, Ala., succeeding the late George A. Brewer. MRS. G. A. BREWER is chairman of the board of directors.

Other officers recently elected include the following: MALONE MOORE, vice-president and treasurer; IRWIN EHLMANN, secretary; and E. M. SNOW, plant manager.

HARRIS N. SNYDER, vice-president and treasurer of the Buffalo Slag Company, Buffalo, N. Y., has been re-elected a vice-president of the Empire State Association of Commerce.

F. P. BUSH of Spokane, Wash., was elected president of the Sulphur Springs Gypsum Company of Wyoming. He succeeds H. J. Adams. Other officers elected were F. H. DAVIS, vice-president; W. N. SIMONSTON, secretary; A. W. KIERCHOLZ and W. L. CASEY, directors. All are from Spokane.

FRED LANG, for 44 years an employee of the Lehigh Portland Cement Company at Mitchell, Ind., recently retired from active service. During his association with Lehigh Mr. Lang held numerous positions, the last being first engineer of the new electric powerhouse.

WILLIAM H. K. MILLER, CHARLES B. STEWART and THOMAS A. CHERRY, all long-time employees of the Standard Lime & Stone Company, Baltimore, Md., were honored recently at a dinner given by the company. All have been in the service of Standard Lime & Stone for 50 years.

JOHN C. BEST, vice-president of the National Gypsum Co., has been named a committee member of the United States Chamber of Commerce for 1948.

MAURICE W. GRIFFIN, who has been with Pacific Coast Aggregates, Inc., San Francisco, for the last 30 years, has been appointed sales manager in the San Francisco district. He has been plant superintendent at several of the company's operations, as well as assistant general sales manager.

MRS. M. T. EPLING, owner of the M. T. Epling Sand & Gravel Company, Gallipolis, O., employs the sternwheel motor vessel *Richard Raike* in operating her business. The craft is used to push gravel barges on the Ohio River.

JOSEPH P. WOLFF, commissioner of the Department of Buildings and Safety Engineering of the City of Detroit, has been elected chairman of the board of governors of the Building Officials Foundation for the year 1948.

Mr. Wolff has been commissioner of the Detroit building department since 1930. He is a member of the Engineering Society of Detroit, and a director of the Building Officials Conference of America, Inc.

ARNOLD A. GUSTAFSON, who has been associated with the Freeport Sulphur Company since 1934, was recently made operations assistant to the general superintendent at the firm's Grande Ecaille mine in Louisiana. Before joining the staff of Freeport, he had been connected with various other mining operations. Earlier positions with Freeport included superintendent of production at Grande Ecaille and manager of an exploration office at Toronto.

JESSE J. JACOBSEN of Menominee, Mich., has been appointed plant engineer for the Limestone Products Company of that city. The post is a newly created one, occasioned by the firm's expansion. Mr. Jacobsen was formerly a sales engineer with the North Western-Hanna Fuel Company.

CLYDE W. MILKS has been appointed special representative and public relations director for the Ash Grove Lime & Portland Cement Company, Omaha, Neb. He will have headquarters in Omaha.

MURRAY D. SHAFFER, Mansfield, O., recently resigned from his duties as state highway director in order to accept the directorship of the sales and research department of the Buffalo-Springfield Roller Company, Springfield, O. Mr. Shaffer served with the state highway department from 1939 until his resignation, which became effective on January 31.

JOSEPH S. YOUNG, president of the Lehigh-Portland Cement Company, Allentown, Pa., was re-elected a member of the National Industrial Conference Board at the board's 292nd meeting, held on December 18, 1947, at the Waldorf-Astoria Hotel in New York.

Mr. Young, who for many years has been active in the organization's work, was first elected a board member a year ago.

The father of America's great highways was Eli Whitney Blake, who invented the first stone crusher in 1851, when America had fewer than 20 miles of hard-surface roads. Blake's invention also gave railroad roadbeds crushed stone foundations.

OBITUARIES

Theodore ("Ted") Roosevelt Prell, district sales manager, Indiana-Michigan District, Universal Atlas Cement Company, died suddenly of a heart attack at his home in LaGrange, Ill., on December 31, 1947.

Mr. Prell was associated for several years with Swift & Company as a salesman. He joined Universal Atlas at Chicago in 1929 and was made correspondent in 1934. In 1944 he was appointed to the position he held at the time of his death.

JAMES G. PARKER, sales manager of the Buffalo Sand Co. Inc., Buffalo, N. Y., died on Dec. 28 on his 63rd birthday after an illness of seven weeks.

Mr. Parker was a construction engineer for The Morgan Engineering Co. He joined the Buffalo Sand Co. in 1937.

HARRY G. ELAM, 51, treasurer of the Elam Brothers Corporation, Rochester, N. Y., a sand and gravel concern, died on December 25 in his home after a long illness. The firm, of which his brother, Adelbert, is president, and another brother, Howard, is secretary, was founded by their father, the late Walter J. Elam, as W. J. Elam and Sons.

JAMES DICKSON, 77, a retired engineer for the Buffalo Sand & Gravel Co., died recently in a Buffalo hospital after a brief illness.

ERNEST DAVIS JR. died at Belleville, Ill., as a result of injuries received at the Columbia Quarry Company's plant. He was 21 years of age.

WILLIAM M. ANDREWS, a former president of the National Crushed Stone Association, died unexpectedly as the result of a heart attack on December 28, 1947. He was the president of the Union Limestone Company of Newcastle, Pa.

GEORGE A. BREWER, president of the Longview-Saginaw Lime Works, Inc., Birmingham, Ala., died recently in that city.

F. E. TOWN, superintendent of the Manitowoc (Wis.) plant of the Medusa Portland Cement Company, died suddenly in Cleveland, O., on December 2, 1947.

HARRY LINCOLN, an employee of the Tobin Quarry Company near Ellsworth, Kan., was killed in an accident during loading operations near Kansas City. He was 52 years of age.

JOHN W. MCCANN, 61, of Omaha, Neb., owner of the McCann Sand & Gravel Company of Valley, Neb., died recently at his home in Omaha.

THEODORE REDNER, 58, an employee of the Consolidated Stone and Sand Co., Montclair Heights, N. J., died at his home in Riverdale, N. J., on January 3.

JOSEPH W. MCFARLAND, president and general manager of the National Gypsum Company of Canada, Ltd., died at Halifax, N. S., after a brief illness. He was 55 years of age.

GEORGE RICHMOND, 80, proprietor of the Richmond Stone Company, Houston, Tex., died recently in that city. He retired from active business life ten years ago.

W. L. LANE, chief clerk of the Marblehead Division, Kelly Island Lime & Transport Company, died on December 9, 1947, at Port Clinton, O., after an illness of three weeks. Mr. Lane, who was 81 years of age, had been associated with the Kelly Island Lime & Transport Company for 56 years.

SCHUYLER HAZARD, 80, at one time a prominent figure in the sandstone industry in Western New York, died at a hospital in Albion, N. Y., on January 8.

He came to Albion 40 years ago as chief engineer and general manager for the Orleans County Quarry Company and the Medina Sandstone Company, and served in full charge of the operation of eight local quarries for many years.

GERALD J. DONAGHY, who was formerly secretary of the Lone Star Cement Corporation, died recently at his home in Huntington, Long Island, after a lingering illness.

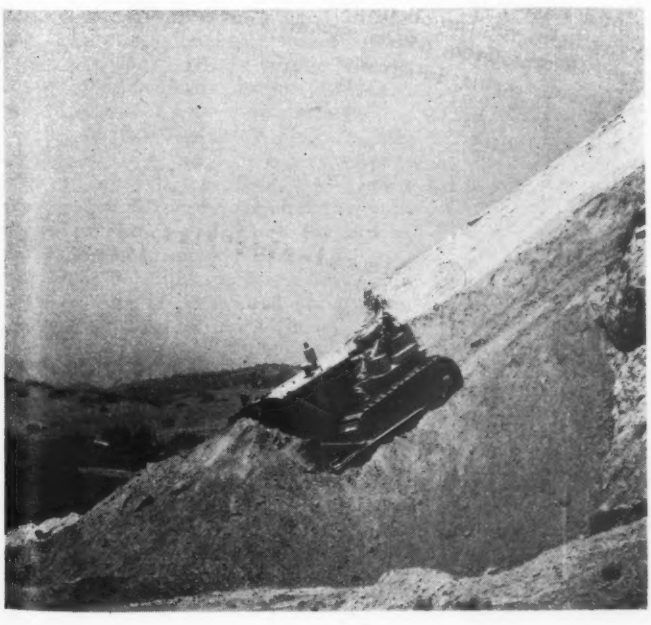
MALCOLM WATKINS, superintendent of the Marquette Cement Company's plant at St. Louis, Mo., died recently in City Hospital as a result of injuries sustained at the plant.

ISAAC DOUGHTEN JR., who was formerly president of the Port Deposit Stone Company, Post Deposit, Md., died recently at his home in Newton, Mo. Mr. Doughten was the founder of the stone business. He was 65 years of age.

FRANK M. HOAGLAND, a salesman for G. and W. H. Corson, Inc., Plymouth Meeting, Pa., died on November 12 at his home in Woodbury, N. J.

The board of directors of General Portland Cement Company has declared a dividend of 25 cents a share on the common stock of the company, payable December 16, 1947, to stockholders of record December 1, 1947.

Nineteen states have passed anti-boycott labor laws greatly prohibiting secondary boycotts. These states are Alabama, California, Colorado, Delaware, Florida, Idaho, Iowa, Kansas, Louisiana, Massachusetts, Minnesota, Missouri, North Dakota, Oregon, Pennsylvania, South Dakota, Texas, Utah and Wisconsin.



• **Left: Dozing decomposed granite to the bottom of the San Benacio Canyon (Calif.) Quarry, a Granite Construction Company operation. The "Caterpillar" diesel D8 is equipped with a "Caterpillar" cable control and No. 8S bulldozer. It moves a load of 10 to 12 cu. yds.**

• **Below: Loading the granite into trucks with a "Cat" diesel D4 tractor teamed with a Trackson Traxcavator that has a 1-cu.-yd. bucket. The outfit keeps 18 trucks (4- to 8-cu.-yd. capacity) busy on a 5-mile haul.**

SWITCHING TIME CUT 50%

25-Ton G-E Switcher at Smith Lumber Company Will Pay for Itself in Four Years

Switching time cut in half! Availability 97.7%! A $350 per month saving! This is the record of the G-E 25-ton diesel-electric switching locomotive at the Smith Lumber Company, Chapman, Alabama. In June 1946 the 25-tonner replaced a 45-ton coal-burning steam locomotive. Eleven months later, Mr. N. F. McGowin, president of the company said:

"The G-E diesel-electric locomotive is the best motive power for handling our switching requirements. It is available for service whenever needed with a reduction in operating and maintenance costs of better than $350 per month."

At this rate the switcher will pay for itself in less than four years.

ADDITIONAL BENEFITS

In addition to large savings the management has received other benefits. The G-E locomotive has slashed switching time by more than 50%. Inspection, refuelling and maintenance require only 16½ hours per month—a 97.7% availability. The new locomotive is safer too. Formerly, there was a continual fear of fire when the coal-burning steamer operated near the mill and timberlands. The new G-E diesel-electric has removed this serious fire hazard.

FIVE STANDARD MODELS

This performance is not unusual for G-E switchers. Hundreds of them now in use throughout the country are saving time and money in almost every type of industry. Whether your own requirements are heavy or light, you can obtain fast, low-cost switching with any of our five standard models: 25-ton, 45-ton, 50-ton, 65-ton, 80-ton. Your G-E representative will arrange a survey and estimate your savings in advance.

See him today.

CLEAN OPERATION

Diesel-electrics give off no dangerous exhaust gases, and with these G-E switchers you'll virtually eliminate the nuisance of smoke and soot. This is particularly important if you are located in a smoke-conscious community.

Switch to Diesel-electrics and Save

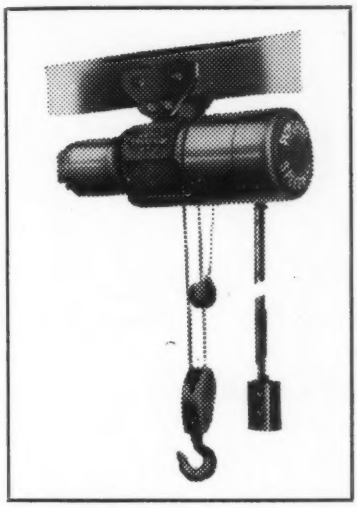
GENERAL ELECTRIC

120-34

Pit and Quarry New Machinery And Supplies

● Electric Hoist

Wright Hoist Division of the American Chain and Cable Company, Incorporated of York, Pa., are introducing their new line of Speedway Electric Hoists, which



are at present being built in capacities of 250 lb. to 2000 lb.

This new streamlined hoist incorporates in its design and construction features which serve to make it an outstanding value in the light hoist field. Among them are the grooved drum, which accommodates a full 12-in. lift with no overwinding; push-button control; preformed wire rope with swaged fittings for anchoring; Timken tapered roller bearing trolleys, which permit moving loads along runway beams; standard N.E.M.A. motor frames and ratings.

The Wright Speedway Hoist is furnished with lug, hook or trolley suspension as may be required. All hoists furnished with trolleys are equipped with special pull chain and handle for moving the hoist along runway beams.

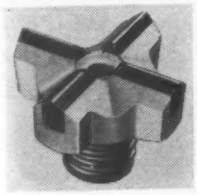
Safety, flexibility and efficiency are basic features in design and construction claimed for the new line of hoists.

● Carrying Case

The Air Reduction Sales Company of New York, N. Y., recently announced the availability of an improved carrying case for transporting a welding or cutting outfit to the job in an orderly and compact manner. Torch, tips, regulators, hose, gloves, goggles, wrenches and miscellaneous equipment can all be compactly arranged in this new case.

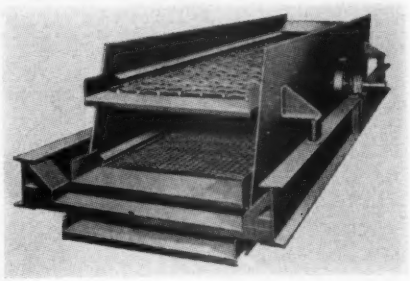
Construction of the new Airco carrying case is of 22-gauge cold rolled steel with flush double-lock seams. Reinforced ends and cover are especially paneled for rigidity and strength. Another feature is a ripple exterior finish of enamel.

● Rock Drill



The "Sulmet" rock drill bit is made of tungsten carbide, which is extremely tough, making it especially suitable for the hardest rock.

The Sulmet bit makes possible the use of longer feeds that permit fewer bit changes. Because of the hardness of tungsten carbide, Sulmet bits are said to outlive ordinary bits. The Joy Manufacturing Co., Pittsburgh, Pennsylvania, in collaboration with Allegheny Ludlum Steel Corp.



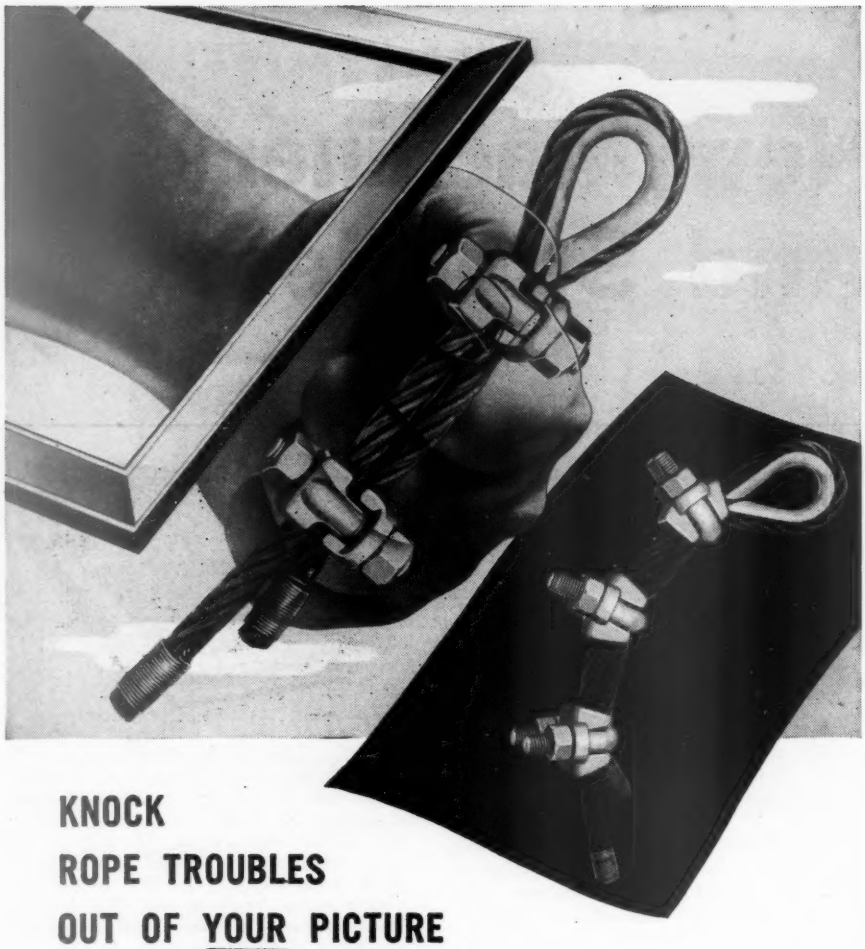
Recently added to the vibrating screen line of the Bonded Scale Company, Columbus 7, Ohio, are six models of 5-ft.-wide heavy-duty screens. These are built with one to five decks, and are 10, 12, and 14 feet long. Vibration is produced by an eccentric shaft, mounted in four SKF self-aligning, double roller bearings and SKF housings. The base frame is made of welded I-beams, reinforced at all intersections. Screens come equipped with screen cloth or plates as needed.

● Three-Way Unit

A new 1½-cu. yd. Lima shovel, crane and dragline has been built with an extra margin of strength and safety. The boom is of box-type, electrically-welded steel construction with wide flaring base. The dipper handle is a single unit with one-piece racking. When the machine is working as a crane, it has a capacity of 30 tons at 12-ft. radius.

The crawler truck construction is the small, dolly-roller type with end drive principle. Each belt is independently driven by a heavy sprocket chain, which is housed under the treads. All rollers are equipped with piston-ring type seals for retaining the lubricant and protecting the bronze bushings.

Steering is accomplished with the rotating unit in any position through "Precision" air-controlled clutches. "Precision" air control is employed on all major function including steering, winging and propelling, hoisting, crowding and retracting, boom hoist, dipper trip, shift from swing to propel and the swing brake. The Lima Shovel and Crane Division, Lima-Hamilton Corp., Lima, O.



KNOCK
ROPE TROUBLES
OUT OF YOUR PICTURE
...WITH THE LAUGHLIN

"FIST-GRIP" SAFETY CLIP

Only The Laughlin "Fist-Grip" Safety Clip Gives You Service and Protection Like This:

Won't Crimp or Crush . . . rope lasts far longer

Simple, easy to put on . . . saves time, manpower

100% Foolproof . . . can't go on backward

Super Grip . . . two clips do the work of three

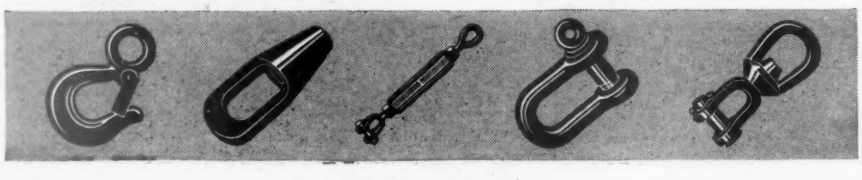
Extra Strength and Safety . . . entire clip, including bolts, drop-forged

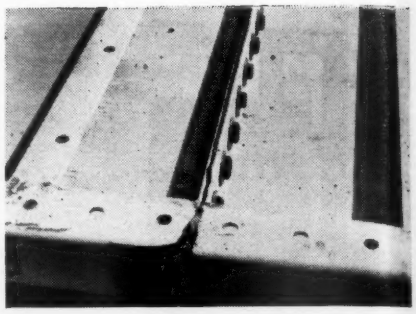
"Fist-Grip" Clips develop 95% to 100% of the rope strength. They can make important savings in time, money and rope . . . for *you*. Distributed through mine, mill and oil field supply houses. WRITE FOR LAUGHLIN'S CATALOG #140 . . . up-to-the-minute data on industrial fittings.

THE THOMAS LAUGHLIN CO., DEPT. 3, PORTLAND 6, MAINE.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

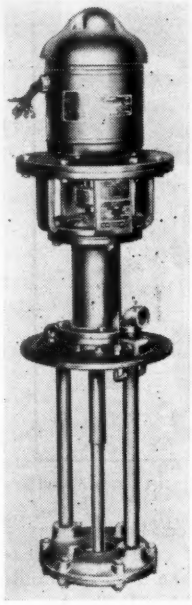




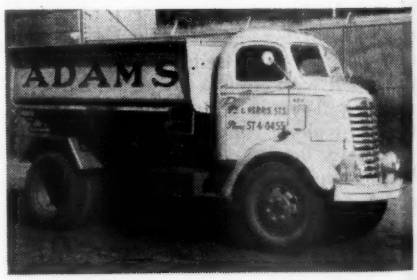
A section of a prefabricated dredge hull. The new design for these sections permits internal bolting. The standard sections are bolted together through the border angles. No bolt heads or nuts are exposed on the outside of the hull. The American Steel Dredge Company, Inc., Fort Wayne, Indiana.

Pumps for Abusive Jobs

A line of horizontal and vertical shaft pumps designed for abusive applications is offered by Nagle Pumps, Chicago Heights, Ill.



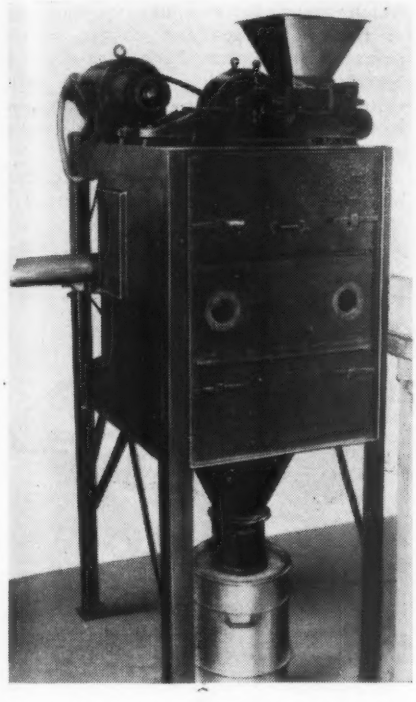
Six vertical and horizontal types of Nagle pumps are available. Type "SW-O" is illustrated. This pump has no stuffing box nor submerged bearing and is designed for wet pit or submerged operation. The anti-friction bearings of this vertical shaft pump are supported in a pedestal attached to the floor plate. Shaft and bearings are well designed for the heaviest loads, and are individually lubricated. The anti-friction bearings are supported in accurately machined end caps clamped into the pedestal by means of two readily accessible bearing studs. The exposed parts are made of the metal or alloy offering high resistance to the specific attack.



One of a new series of dump trucks engineered for special heavy-duty service. These new GMC models have heat-treated frames with straight side rails and stress absorbers, special dump truck rear axles, over-sized steering knuckles, solid disc clutches, larger brakes, and a radius rod drive. The GMC Truck & Coach Division, General Motors Corp., Pontiac, Michigan.

● Felt Dust Collector

This new dust collector, the "Mikro-Collector," embodies several new principles. It utilizes the first commercially successful application of hard-pressed wool felt as a filter medium in industrial air and gas filtration. Because the minute pores in the felt filter tend to clog up,

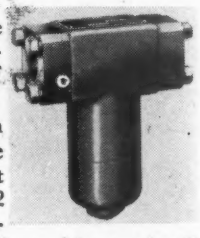


this unit has a hollow annular blow ring which hugs and flexes the cylindrical felt bag. The ring is moved up and down the outer surface of the bag by means of a conventional chain-and-sprocket drive.

Around the inner periphery of the blow ring is a narrow slit through which is directed a jet of air supplied by a positive pressure blower. This counter current of air is conveyed to the blow ring by a flexible hose and assures a perpetually clean bag. It also means that during the filtering operations no portion of the filter surface need be cut off for cleaning or shaking. The manufacturers claim 99.99 per cent minimum recovery of most solids. The Pulverizing Machinery Co., 257 Chatham Road, Summit, New Jersey.

● Proportional Type Oil Filter

The announcement of a new proportional type oil filter using a venturi design, by Vickers Incorporated, 1598 Oakman Boulevard, Detroit, Mich., will be of considerable interest in the field of hydraulics.



The new design features a cartridge which filters out particles down to 2 microns in size. Reversible filtering action with equal efficiency in either direction, meets the requirements of closed circuits. The use of a by-pass valve is not necessary as the venturi action in the new Vickers filter controls maximum pressure built up across the cartridge.

THE Walnut Test

. . . SHOWS HOW A NEW HOLLAND
Double Impeller Breaker

PERFORMS PRIMARY AND SECONDARY CRUSHING IN ONE OPERATION

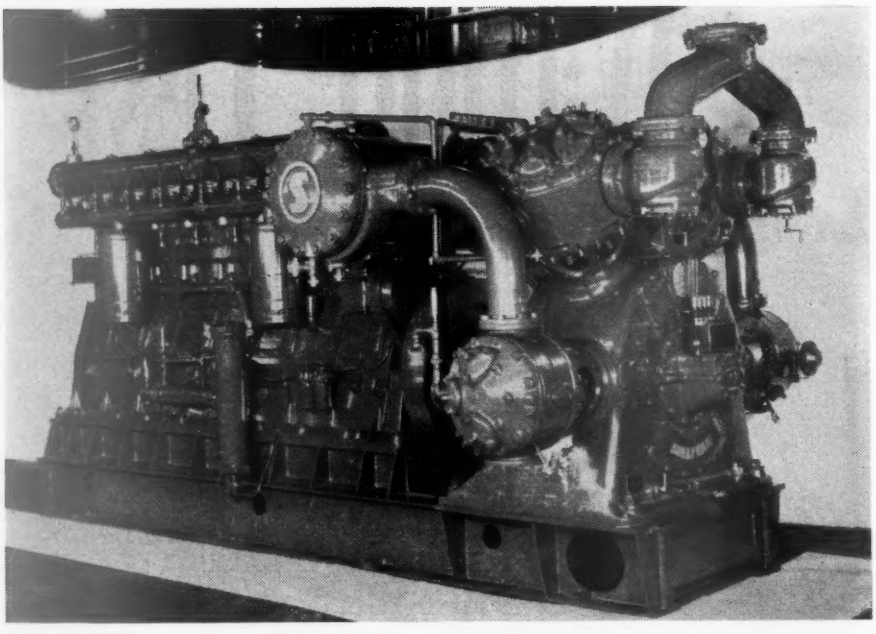
Try this test. Tie a walnut on a string and whirl it against a hard surface. Note how completely it breaks . . . how uniform the pieces are . . . how little effort was required. That's because breaking force was evenly distributed. * * *

That same action . . . breaking by impact . . . takes place in a New Holland Double Impeller Breaker. Stone that is fed to the machine . . . every fragment of it down to the pre-selected product size . . . is hurled repeatedly against massive breaker bars at speeds up to 100 mph. Thirty inch stone can be reduced to minus ⅞ inch in *one* low-cost, efficient operation. Handling costs are reduced . . . power requirements minimized . . . profits multiplied.

New Holland Double Impeller Breakers are available in three models to meet varying production requirements. Don't delay investigating the increased profit possibilities of this revolutionary new method that reduces rock in a *single* operation. Write today for illustrated booklet that fully describes New Holland Double Impeller Breakers.

NEW HOLLAND MANUFACTURING
Mountville, Pennsylvania

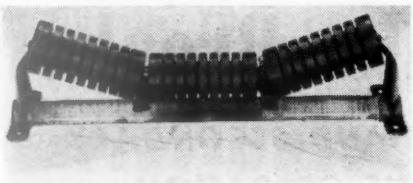
NEW HOLLAND DOUBLE IMPELLER Breakers



An Atlas diesel engine directly connected to an air compressor. This is an eight-cylinder engine, with a 9-in. bore and a 10½-in. stroke, rated to develop 320 b.hp. at 600 r.p.m. All models of these engines are convertible for operation on natural gas. The Atlas Imperial Diesel Engine Co., Oakland 6, California.

● Cushion-Type Idler

This new non-pneumatic cushion-type idler consists of rubber rings mounted on the idler core, instead of the conventional rubber-covered steel idler. The manu-



facturer states that high resiliency of the rubber rings solves the impact problem.

The new device is an adaptation of the principle which led to using a battery of pneumatic tires, mounted on shafts revolving in bearings, to protect the belt at dumping points in pit and quarry operations. The Goodyear Tire & Rubber Company, Akron, Ohio.

● New Closure for Bags

The Bemis "Rip-Cord" closure for textile bags is made by sewing a special cotton cord across one side of the bag at the same time and with the same thread used to close the bag. Bags may be opened simply by grasping one end of the cord and jerking quickly toward the other end of the closure. The bags are not damaged in opening, so their re-use life is lengthened and their salvage value increased.

The machine for applying the Rip-Cord closure to valve bags has recently been placed in production. This machine enables one operator to sew and bundle, in 50-bag lots, over 1000 bags an hour. A conveyor table is built around the sewing head and puller to carry bags through the machine. This conveyor is synchronized with the sewing machine speed. An electric-eye-controlled automatic cutter trims the Rip-Cord ends to the desired length.

Any commercial sewing machine of the two-thread double lock stitch type may be adapted easily and at a minimum cost to make the Rip-Cord closure. These machines need only the addition of a

special pressure foot to feed the Rip-Cord and a stand and guide loop for the cord. Also, single stitch machines may readily be adapted to double lock stitch for sewing Bemis Rip-Cord. Bemis Bro. Bag Co., 408 Pine St., St. Louis 2, Mo.

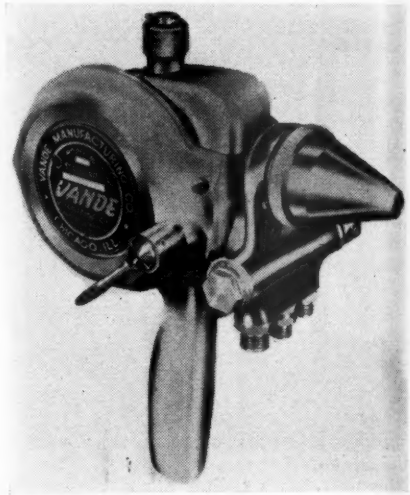
● Track Cable Scraper

A Sauerman track cable scraper utilizes a "Crescent" scraper bucket attached by chains to a carrier traveling on a track cable. This machine operates much the same as the slackline cableway, except that the Crescent bucket, being bottomless, must convey its load over the ground instead of through the air. When the bucket reaches the desired dumping point, a few rotations of the rear drum of the hoist serve to tighten the track cable and lift the bucket off its load; then the brake is released on the front drum that controls the pull-cable and the empty bucket and carrier glides back down the inclined track cable. Sauerman Bros., Inc., 522 S. Clinton St., Chicago 7, Illinois.

● Metallizing Gun

The Vande metallizing gun completely eliminates backfire by means of a nozzle which incorporates a new development of mixing the gas and oxygen at the point of combustion. Each wire nozzle is specifically designed to provide the exact volume for the gas used: acetlyene, propane, or other gas. No air cap adjustments are needed.

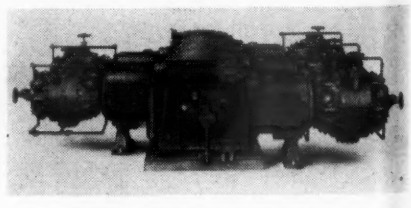
Another feature is the finger-tip turbine control. Positive turbine control is



achieved by a compound turbine containing a rotor and a stator responsive to opposing propulsion fluids. One propulsion fluid jet remains in a fixed position in the primary turbine. A second jet is directed by a control lever in the secondary turbine and either reduces or increases the primary turbine speed, thus affording complete wire feed control at all times. The Vande Manufacturing Company, 1938 South Michigan Avenue, Chicago 16, Illinois.

● Heavy-Duty Compressor

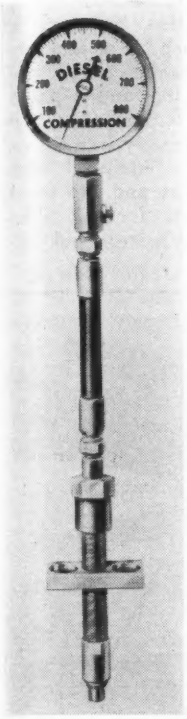
The Cooper-Bessemer "Type JM" compressor was designed especially for heavy-duty motor-driven service and is a particularly compact and accessible unit. It is available in six sizes, with one to six compressor cylinders in a range of 500 to 2750 horsepower. Air or gas can be handled from low vacuums



to pressures ranging above 6000 p.s.i.

Among the desirable mechanical features cited are its simple, one-piece frame; interchangeable, precision-type main and crankpin bearings; full pressure lubrication system, including a built-in filter and cooler. The Cooper-Bessemer Corporation, Mt. Vernon, O.

• Diesel Compression Tester



A new diesel compression tester has been developed for engine maintenance, repair, and rebuilding work on diesel-powered equipment.

Simplicity of use is one of the distinctive features of the instrument. The fuel injector is removed from the cylinder to be tested and the adapter of the compression tester is inserted into the injector opening. The adapter is designed to be held in place by the same means that is used for holding the fuel injector.

After attaching the tester, the engine is started and operated at either cranking or idling speed. The engine pressure is communicated to the dial gauge through a "cartridge-sealed" trapping device in the adapter, and the gauge pointer swings gradually to the maximum compression pressure. When the pointer has reached this position it remains stationary, permitting close, accurate reading. The air pressure in the gauge may then be released by depressing a push-button vent valve. The venting feature makes possible the taking of compression readings in quick succession. Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh 6, Pennsylvania.

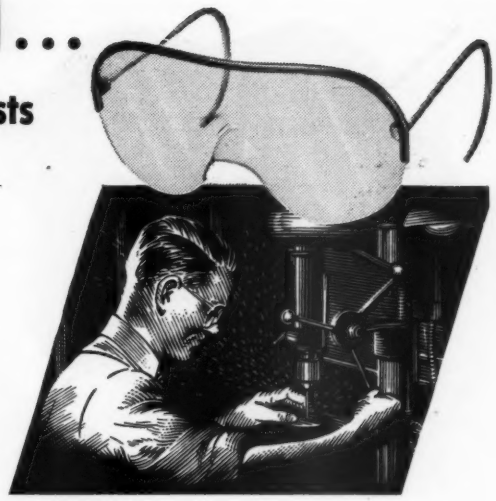
• Portable Drinking Fountain

A new portable drinking fountain fitted with a salt dispenser, to provide fresh water for gangs working outside shops and in the field where they do not have access to fixed drinking fountains, is being offered by the Dobbins Manufacturing Company, Elkhart, Ind.

The portable equipment consists of a tank with a capacity of four gallons; a

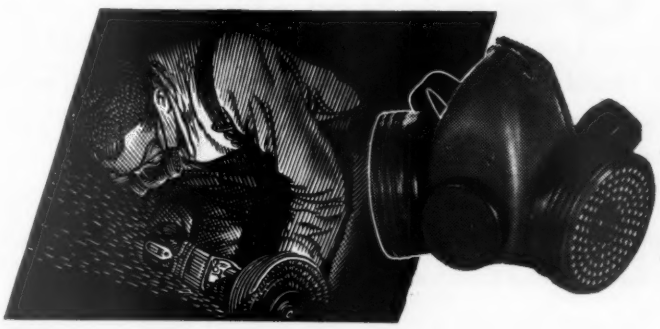
Get WILLSON . . .

to Change Accident Costs into Safety Savings



PROTECTION IN 9/10 OF AN OUNCE . . . Day long comfort with the Feather Spec*. Large, clear or WILLSON Tru-Hue green, plastic lens gives unobstructed vision.

MOLDED TO FIT A THOUSAND EYES . . . Mirror-smooth rolled edges of the plastic eye cups conform to the contours of the eye cavities for snug, comfortable fit on hazardous jobs. With Super-Tough* lenses.



ALL 'ROUND PROTECTION—ALL 'ROUND COMFORT . . . Metal fumes; chromic acid mists; all dusts—excluded by dual, easy breathing filters and snug fitting facepiece.

For complete information on these products and their application, as well as many more eye and respiratory protective devices, get in touch with your nearest Willson distributor or write us direct.

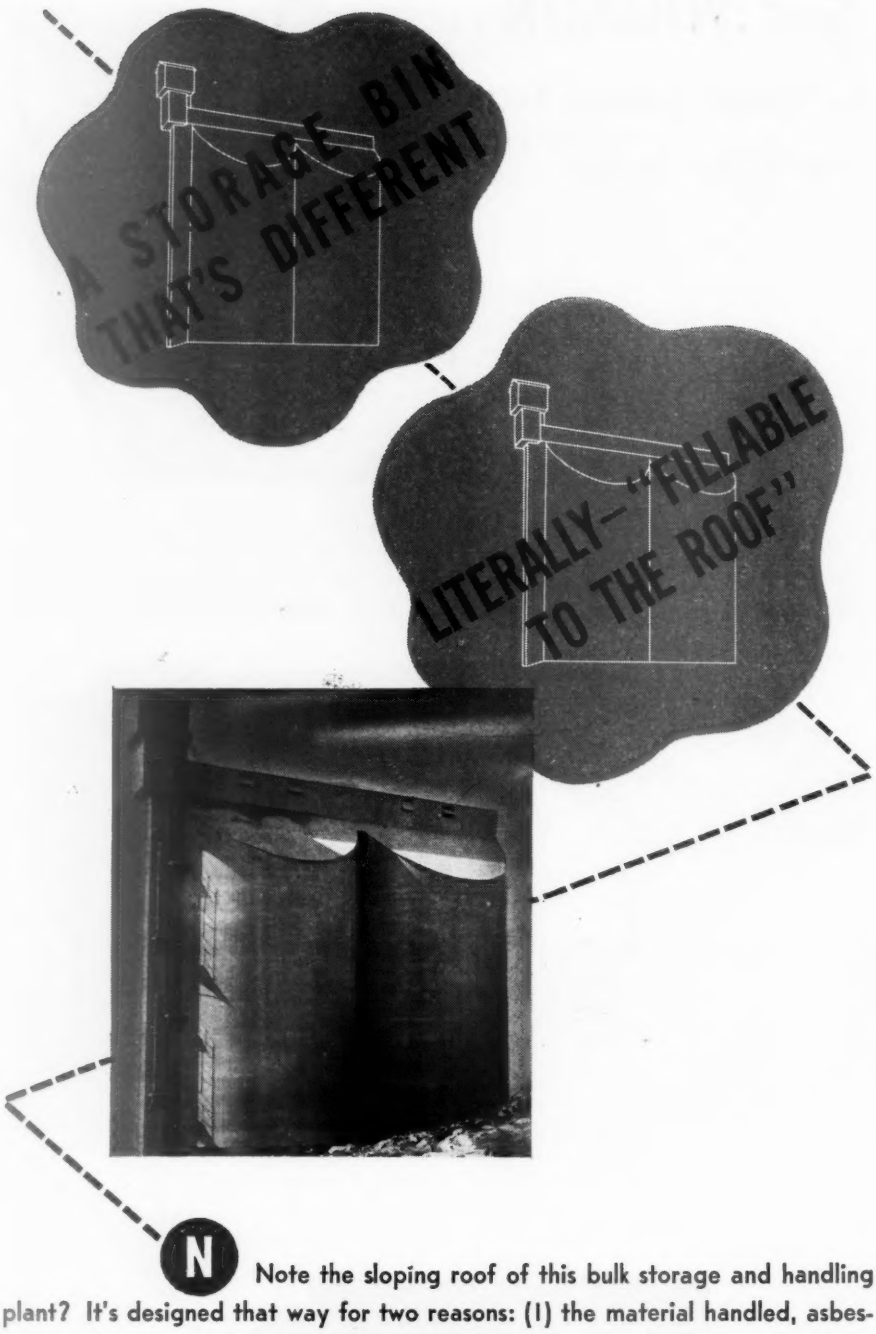
*Trade Mark

GOGGLES • RESPIRATORS • GAS MASKS • HELMETS

DOUBLE WILLSON PRODUCTS INCORPORATED

READING, PA., U. S. A.

102 THORN STREET, READING, PA., U. S. A.



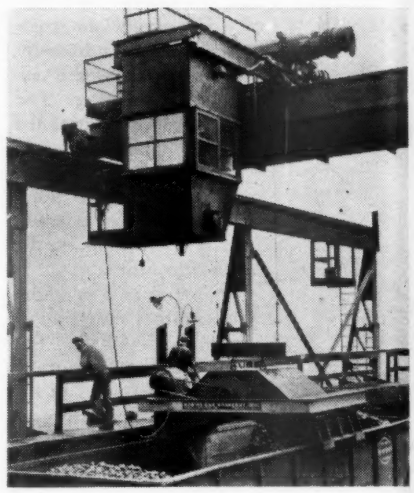
N Note the sloping roof of this bulk storage and handling plant? It's designed that way for two reasons: (1) the material handled, asbestos ore, has a natural slope of about the degree shown; therefore, when filled, there are no waste air pockets; and (2) the slope provides a good water shed and reduces the snow load in winter.

This storage bin, designed and constructed for an asbestos firm in Vermont, is a good example of the way we depart from conventional treatment when the nature of the material and the location of the plant call for the unusual.

Your project for concrete bulk storage and handling plant — if placed with Nicholson — will be in the hands of specialists broadly experienced in the design and construction of concrete bins and tanks.

BULK STORAGE · COAL-GRAIN-LIQUIDS STORAGE · HANDLING EQUIPMENT
THE NICHOLSON CO.
CONSTRUCTION · CEMENT-OIL-CHEMICALS
TEN ROCKEFELLER PLAZA, NEW YORK, N. Y.

built-in, corrosion-proof bubbler of the tilting type, which is concealed inside the fountain to prevent freezing; a water-release knob which, it is said, requires only slight pressure to provide the desired flow of water; and a pump equipped with a valve plunger, which provides air for the necessary water pressure. All fountains are equipped with loops for carrying straps and are fitted with mounting brackets for salt-tablet dispensers, each of which will hold 500 tablets.



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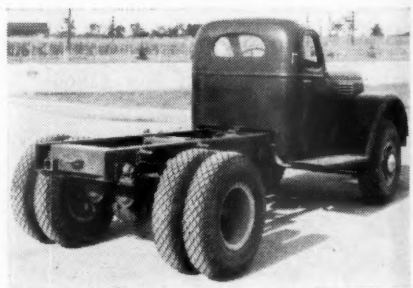

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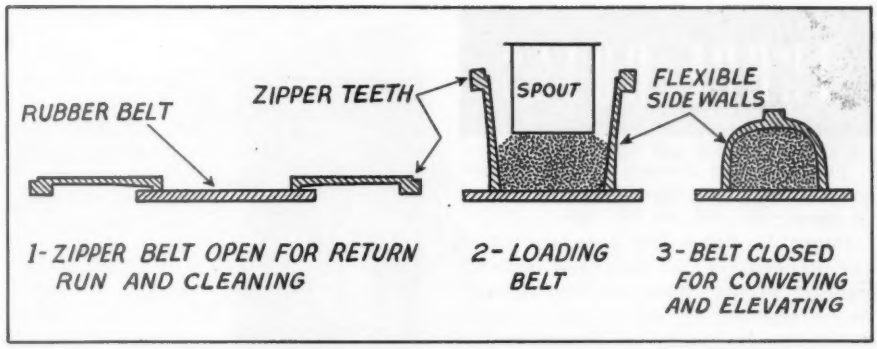

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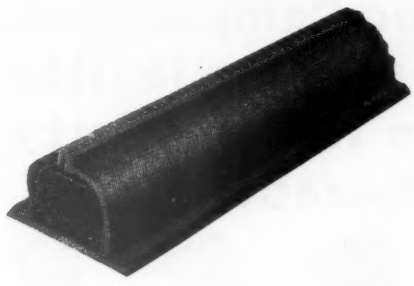

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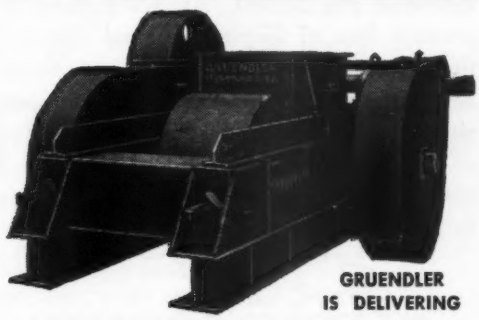
For Maximum Reduction, Economy, Production, and Safety GRUENDLER ROLL CRUSHERS



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WRITE FOR CATALOG NO. 700

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2X Hammermills up to 15 tons per hr.
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FEEDERS — CONVEYORS — BUCKET ELEVATORS

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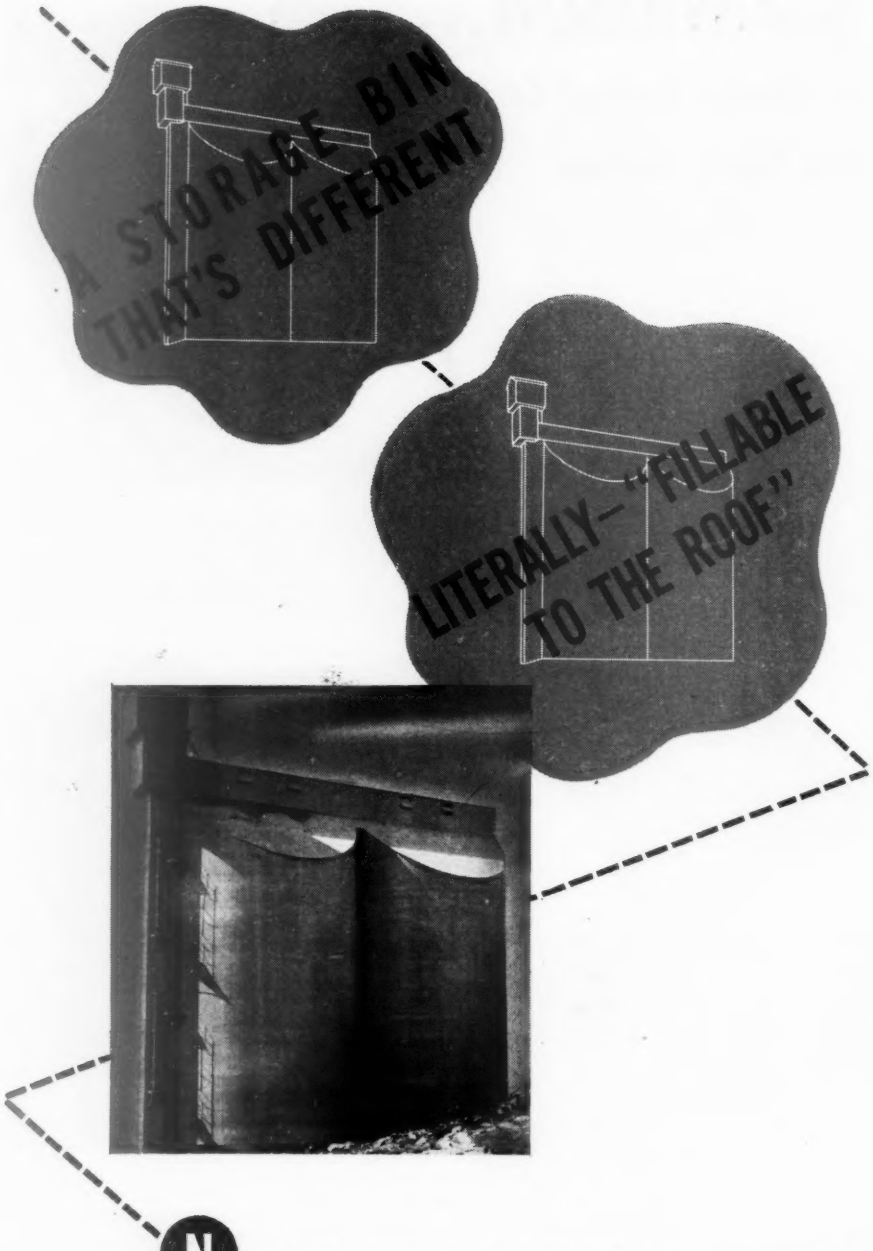

N Note the sloping roof of this bulk storage and handling plant? It's designed that way for two reasons: (1) the material handled, asbestos ore, has a natural slope of about the degree shown; therefore, when filled, there are no waste air pockets; and (2) the slope provides a good water shed and reduces the snow load in winter.

This storage bin, designed and constructed for an asbestos firm in Vermont, is a good example of the way we depart from conventional treatment when the nature of the material and the location of the plant call for the unusual.

Your project for concrete bulk storage and handling plant — if placed with Nicholson — will be in the hands of specialists broadly experienced in the design and construction of concrete bins and tanks.

BULK STORAGE · COAL · GRAIN · LIQUIDS · HANDLING EQUIPMENT
THE NICHOLSON CO.
CONSTRUCTION · CEMENT · OIL · CHEMICALS

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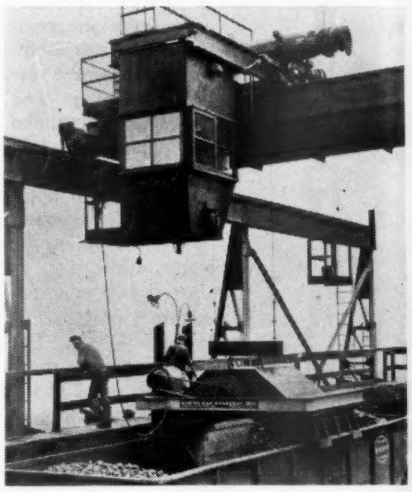

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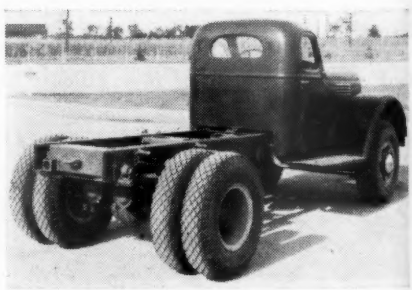

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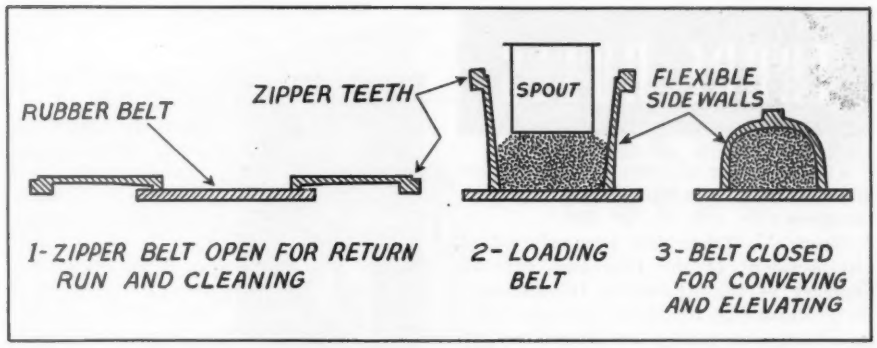

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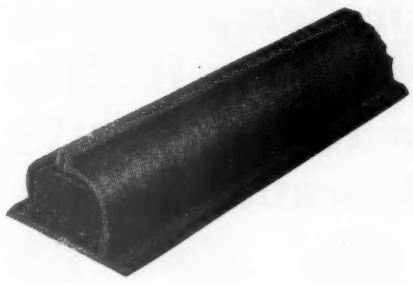

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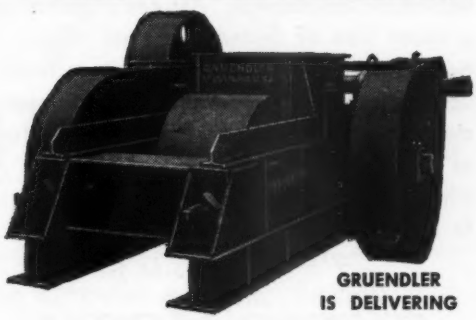

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TRADE NOTES

The following changes have been announced in the staff of General Electric Company:

Henry V. Erben has been elected a vice-president of the firm and general manager of the Apparatus Department. He succeeds Roy C. Muir, company vice-president, who retired on December 31, 1947, after more than 42 years of service.

John D. Lockton has been elected treasurer of the company, succeeding Jesse W. Lewis, who retired on December 31. Mr. Lewis had been with General Electric for 37 years.

R. J. Nymberg

Effective November 1, 1947, R. J. (Ray) Nymberg became general sales manager of the Hercules Steel Products Corporation, Galion, Ohio, manufacturers of hydraulic hoists, bodies and other automotive equipment.

Mr. Nymberg will have charge of sales and advertising of Hercules automotive products. He was previously associated with Gar Wood Industries, Inc.

L. B. McKnight, a member of the Chain Belt Company's staff since 1927, has been named vice-president in charge of the Conveyor and Process Equipment Division and the Construction Machinery Division. He was formerly executive assistant to the president of the company.

At the same time O. W. Carpenter was also elected to a vice-presidency. He

L. B. McKnight

O. W. Carpenter

will be in charge of finance. Before joining Chain Belt in 1943 he was associated with the Kearney and Trecker Company.

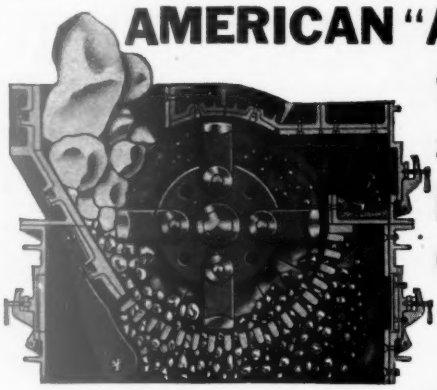
Louis W. Rasor has been appointed district sales manager of Goodyear Tire & Rubber Company's Mechanical Goods Division, at Charlotte, N. C., it was announced today by H. D. Foster, manager of the Mechanical Goods Division. The district embraces North and South Carolina, and parts of Virginia and West Virginia. Mr. Rasor succeeds Richard G. Abbott, who now becomes district manager at Los Angeles.

John A. Roebling's Sons Company, Trenton, N. J., manufacturers of wire rope and wire products, through E. C. Low, vice-president in charge of sales, announces the appointment of H. S. Christie as manager of the Atlanta, Ga., branch office. He replaces C. G. Mullings, recently retired after 45 years of service in the Atlanta territory.

The Wickwire Spencer Steel Division of The Colorado Fuel and Iron Corporation has announced the appointment of L. J. Renner as district sales manager, Chicago, Ill. Mr. Renner assumed his duties in the Chicago office on September 15.

Edward J. Gregg, manager of the Seattle plant of the Bemis Bro. Bag Co. passed away suddenly on September 26, 1947, at the age of 53.

G. Edward Conn Jr. has been named manager of the newly established Allis-Chalmers branch office at York, Pa., according to an announcement by J. L. Singleton, vice-president and director of sales of the firm's general machinery division.



AMERICAN "ACS" Hammermills for Compactness and Flexibility in Heavy-Duty Operation . . .

A—"Brute" for heavy reduction. B—"Broadhead" for medium reduction. C—"Splitter" for fine reduction.

Rapidly crushes any hardness of stone with uniform, individual size control. Assures a round or cubical product free of fingerstones and slivers. Conventional front feed produces a coarser finished product with reduced fines. Center-feed hopper receives stone to utilize upper crushing chamber for rapidity of impact and a finer finished product. Available with any of three types of hammers. Capacities up to 250 TPH.

Send for this free booklet

American PULVERIZER COMPANY

Originators and Manufacturers of Ring Crushers and Pulverizers

1059 Macklind Ave.
St. Louis 10, Mo.

Bearings Wear too Fast?

Repour next time with one of the MAGNOLIA BEARING METALS.

Lead-base alloys have a much lower coefficient of friction than any other bearing metal—*1/3 that of "genuine" babbitt.* The graphite treatment insures partial self-lubricating.

Ask your dealer—or us—for bulletin with tips on pouring.

MAGNOLIA BEARING METALS

Look for the Flower Trade Mark

SOLD THROUGH INDUSTRIAL DISTRIBUTORS

MAGNOLIA METAL COMPANY

24 WEST JERSEY STREET ELIZABETH 4, N. J.

W. G. Beriswill

Milwaukee Hydraulics Corporation, manufacturers of the all-hydraulic Hydro-Crane, announces the appointment of W. G. Beriswill as assistant sales manager.

Mr. Beriswill was formerly a division sales manager for Osgood Company and also for General Excavator Company of Marion, O. He will appoint and work with distributors who will handle the Hydro-Crane.

L. A. Welch

R. G. LeTourneau, President, R. G. LeTourneau, Inc., Peoria, Illinois, has announced the appointment of L. A. Welch to the position of executive vice-president for the LeTourneau Corporation.

Mr. Welch will assist in coördinating the functions of the division managers at LeTourneau factories in Longview, Texas, Toccoa, Ga., and Vicksburg, Miss.

Samuel Spring, formerly a research specialist for the federal government, has been appointed to the research and development staff of the Pennsylvania Salt Manufacturing Company. He will have charge of the inorganic research group at Pennsalt's Whitemarsh Research Laboratories.

R. D. McAusland, vice-president and Pacific Coast general manager of the Bemis Bro. Bag Co. at Seattle, has announced the signing of a contract for the construction of a plant at Vancouver, Wash., for the manufacture of multiwall paper shipping sacks. The contract has been awarded to the Ross B. Hammond Company, Portland, Oregon. Construction will start at once.

The St. Regis Paper Company has announced acquisition of the right to manage and utilize 208,000 acres of long leaf and slash pine in Georgia's famous Suwannee Forest. This will ultimately be used to supply pulpwood for the production of bleached and unbleached sulphate pulp, from which will be made paper and paperboard for conversion into multiwall bags and other types of industrial packaging.

H. Barden Allison has been appointed sales manager of the Gilmer Division of United States Rubber Company, V-belt manufacturing and distributing unit in Philadelphia. Mr. Allison was formerly district sales manager of mechanical goods in the Cincinnati district.

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No matter what type of aggregates you screen, you'll benefit by Seco's exclusive fully controlled true circular action. Seco builds over 250 models including single, double, triple and three and one-half deck types.

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SCREEN EQUIPMENT COMPANY, INC.
Buffalo 21, New York
In Canada: United Steel Corp., Ltd., Toronto

H. C. Allington

It was announced by Newell H. Orr, vice-president of The Colorado Fuel and Iron Corporation, that H. C. Allington has been appointed general manager of sales of the Wickwire Spencer Steel Division, with offices in New York City.

Mr. Allington joined Wickwire Spencer Steel in 1943 as manager of a new products department. Later he was selected assistant general sales manager, which position he filled until the present appointment.

Roy K. Ferguson, president of the St. Regis Paper Company, has announced the acquisition by St. Regis of all outstanding stock of the Ellsworth Forest Products Corporation of Ellsworth, Maine. The purchase increased by 82,000 acres St. Regis' timberland holdings in the state of Maine and brought the company's total in the United States and Canada to more than 1,700,000 acres. Ellsworth Forest Products will be operated by St. Regis as a wholly-owned subsidiary.

Harold H. Reed formerly assistant manager of Air Reduction's Metropolitan (New York) district has been appointed manager of this district according to an announcement by H. F. Henriques, general sales manager. Mr. Reed succeeds W. S. Schoenthaler, who is retiring after 37 years of continuous service with the company.

Election of W. A. Roberts and W. C. Johnson, executive vice-presidents of Allis-Chalmers Manufacturing Co., to the firm's board of directors was announced today by Walter Geist, Allis-Chalmers president.

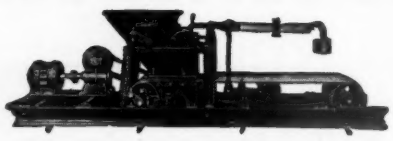
W. A. Roberts

W. C. Johnson

Mr. Roberts is executive vice-president in charge of the company's tractor division, while Mr. Johnson is executive vice-president for the general machinery division.

D. G. Black, general sales manager of the Syntron Company of Homer City, Pennsylvania, announces the establishment of a branch sales office in Montreal at 4695 Sherbrooke Street, West, under the supervision of C. F. A. Gray.

PRODUCTION POINTERS for PRODUCERS



SCHAFFER POIDOMETERS

In handling raw and finished materials, many successful operators point to their SCHAFFER Poidometers as large contributors to production and profit records.

Poidometers combine many essential functions, including weighing, blending, mixing, feeding, and proportioning.

These machines insure accurate, automatic, high-speed operation, and unexcelled product uniformity. They are designed and built to provide continuous, low-cost service under all working conditions. Poidometers are now available with total weight recorders, and remote controls for showing feed rate, total amount delivered, and for changing feed rate.

Write for Catalog No. 5

Schaffer Poidometer Co., 2828 Smallman Ave., Pittsburgh 22, Pa.

Legal Decisions

By LEO T. PARKER

Attorney at Law
Cincinnati, Ohio

Recently a reader wrote in part, as follows: "We own and operate motor trucks for transportation of rock, cement, sand and gravel. The Public Service Commission has ordered us to quit competing against common carriers and apply for a certificate or stop operations.

"Can we obtain a certificate for operation from the Public Service Commission and benefit from laws, rates, etc., relating to common carriers?"

The answer is: According to a recent higher court ordinary contract carriers cannot be classified as common carriers and therefore the Public Service Commission has no jurisdiction. Hence, contract carriers may haul for whom they please, at any time or place, and at rates they choose.

For illustration, in *McCarthy v. Public Service Commission,* 184 Pac. (2) 220, reported the past few weeks, the testimony showed facts, as follows: A company is engaged in the business of hauling sand, gravel, and cement. In every case the sand and gravel is hauled from the closest pit to the point of construction or use, and usually the haul is under 30 miles, and the rates charged depend on the distances involved, type of roads that must be used, and size of the job.

The company applied to the Public Service Commission for a permit or certificate. The higher court held that the Commission could not issue the permit because it had no jurisdiction over the company saying:

"It seems clear therefrom that defendants (company) do not hold themselves out to the public generally for hire. . . . The defendants are rendering a private service to their customers. They are not engaged in a public service inviting an indefinite public generally to hire them. . . . We find no evidence that there is a need to change these contract carriers into common carriers."

Double Compensation

According to a recent higher court an employee wilfully injured by his employer may recover double compensation. Recently a higher court held that sending of an employee into machinery which, if it moves, will injure him, without providing some means of protecting such employee other than the memory of the foreman when starting the machinery, is "wilful misconduct" which entitles the injured employee to special compensation or damages.

For example, in *Henry v. Industrial Accident Commission,* 185 Pac. (2d) 353, reported December, 1947, it was shown that one Henry operates a rock crushing plant. An employee named Horton sustained certain injuries arising out of and occurring in the course of his employment. The facts showed that the employee was employed as a

laborer in the screening and separating unit of the crusher plant, which was operated by a set of push buttons located on a raised tower. Wooden bins were located beneath the screens, which acted as selectors in sorting out the various sizes of rock dumped upon them. During a shutdown the operator of the unit directed Horton to enter a bin for the purpose of cleaning out an accumulation of debris and clearing the screen of rocks which clogged it. Horton had just finished the cleaning when the operator "started the machinery, just as he got his head through the hole coming out from under the screen." The operator ran to Horton's assistance, exclaiming, "I'm sorry. I forgot I sent you in there." Horton received "a crushing injury."

The higher court held Horton entitled to double compensation because of wilful misconduct of his employer. This court said:

"The act of directing an employee to perform the particular work assigned, with the possibility of starting up the machinery before the completion thereof, was the performance of a reckless act that was dangerous and likely to result in physical injury."

Also, see *Scaia's Case,* 69 N. E. (2d) 567. Here the court was asked to decide whether two employees were entitled to double compensation on the ground that they were injured by wilful misconduct of a superintendent. The employees were injured while lifting a roll which weighed about four tons, by means of chains attached at the ends of the roll. One of the chains gave way and permitted the roll to fall, causing injuries to the two employees.

The higher court refused to allow double compensation, saying:

"There was evidence that Sibley (superintendent) could have been more careful, but we fail to find evidence that the risk he took was both so obvious and so great as to render his conduct 'serious and wilful'."

Violated Health Law

According to a recent higher court an employer who violates a state safety or health law is not liable in damages to an employee who contracted silicosis, if the employer proves that no other employee contracted the disease.

For illustration, in *Banks v. Southern Potteries, Inc.,* 204 S. W. (2d) 382, reported December, 1947, an employee named Banks sued the Southern Potteries, Inc., to recover compensation for physical disability claimed to be due to silicosis. The employee proved that the employer in violation of a state law failed to provide fans, conveyors, pipes, etc., to remove the impurities.

The employer proved that other employees working under the same conditions were not injuriously affected. The higher court refused to award the employee compensation under the State Workmen's Compensation Act, and said:

"It may be that the defendant (employer) is guilty of the crime, but a careful examination of the evidence shows that it was too slight to justify a conviction."

Can Hire Workmen

According to a recent higher court public officials may be forced to let contracts to the lowest bidder *only* when a state law clearly prohibits such officials from employing workmen at regular hourly wages.

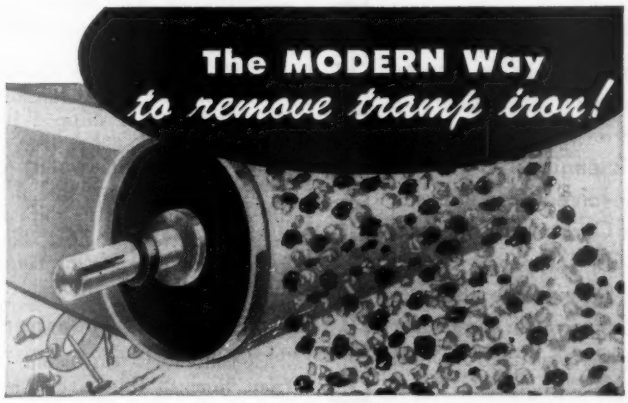
For example, in *Contracting Ass'n v. Board of Education,* 194 S. W. (2d) 731, reported October, 1947, a state law was litigated which states that all contracts for repairs and alterations in school property costing more than $50 must be let to the lowest responsible bidder. Another state law provides that all employees and agents engaged in the work of the Building Department shall perform services as may be designated by the Commissioner of School Buildings.

The higher court held that the board can legally hire mechanics and pay them the regular standard wage scale on jobs where the alterations and maintenance can be done at a less cost than by "letting contracts" for the work.

Ratification of Contract

An important point of law is that although an employee is *unauthorized* to purchase materials for his employer a contract is valid if the seller ships the merchandise, and the buyer accepts and pays for it.

For example, in *Art v. Pacific States Cast Iron Pipe Company,* 176 Pac. (2d) 962, the testimony showed facts as follows: The office manager, named Webb, of a pipe company made a written con-



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"KEEPS PROMISES"

tract to sell one Art a certain quantity of cast iron pipe. This contract contained a clause: "All orders submitted to us through our division sales offices, sales agents, or direct to the general office by the buyer, must be subject to the approval of the vice-president, treasurer, or general sales manager of the Pacific States Cast Iron Pipe Company at Provo, Utah, for final acceptance."

Art accepted delivery of the pipe and paid the agreed contract price. Then he filed suit for damages, alleging that some of the pipe was either defective or damaged by the negligent handling by the seller's employees.

The pipe company argued that the contract was void since it had been executed by Mr. Webb and the agreement provided that Webb's contract must be approved by the home office. In refusing to hold the contract void, the higher court said:

"This proposition is untenable for the reason that all the material specified in the contract was shipped by defendant (Pacific States Cast Iron Pipe Company) to, accepted and paid for by plaintiffs (Art) at the price and on the terms specified in the contract; thus defendant, the principal, had fully ratified by performance the contract entered into by its local agent."

Furnished Transportation

Considerable discussion has arisen from time to time over the legal question: If an employer furnishes transportation for his employees, can an injured employee recover compensation for an injury while being so transported?

According to a recent higher court an employee injured while going to or from work can recover compensation if the testimony shows that the employer furnished transportation to and from work.

For illustration, in *Barrington v. Johnn Drilling Company,* 181 Pac. (2d) 166, reported October, 1947, the testimony showed facts, as follows: One Barrington was employed by the Johnn Company, a general contractor, who furnished Barrington with transportation back and forth daily to work from his home. One day Barrington was killed.

The higher court was asked to decide whether Barrington's wife could recover under the State Workmen's Compensation Act. The court held in the affirmative, saying:

"The defendant (employer) agreed to, and did furnish transportation to Barrington from and to his home as a part of his contract of employment, and the injury and death of the workman arose out of and in the course of his employment."

For comparison see *Fairbank v. Industrial Commission,* 285 Ill. 11. This court held:

"When work for the day has ended and the employee has left the premises of his employer to go to his home, the liability of the employer ceases. . ."

A review of other higher court decisions disclose that the term "arising out of and in the course of employment" *excludes* injuries received by employees while traveling between their homes and their regular places of work, unless the employer *was furnishing* the transportation. Hence, the mere fact that the employer was paying the employee wages *or cost of transportation* when an injury was sustained does not result in the injury arising out of and in the course of employment.

Outside Scope

According to a recent higher court a truck owner acts outside the scope of his employment when repairing his own truck.

For example, in *McDonald v. Denison,* 165 Pac. (2d) 508, reported December, 1947, it was shown that a truck owner had a contract for hauling sand and gravel and other material on a project. His compensation was eight cents per cubic yard mile. The employee was required to service his truck, keep the same in repair and pay for all gasoline and oil used by him. One day he reported at the rock crusher to begin hauling material, but found the rock crusher shut down for repairs. He decided to repair his truck and had an accident and lost an eye while making the repairs. He sued his employer for compensation. The higher court held that the truck owner was not entitled to compensation. This court said:

"We feel that the accident did not arise out of plaintiff's (employee's) employment, nor in the course of his employment."

Piece-Work Employees

Generally speaking, an employer need not pay taxes under Social Security, Unemployment and Workmen's Compensation Laws, nor pay wages specified by the Fair Labor Standards Act on employees who work on "piece basis." However, this rule of law is *not* applicable to employees who work on the employer's premises.

In *Rutherford Corporation v. McComb,* 67 S. Ct. 1473, it was shown that certain employees used their employer's premises and equipment. Their work was done under the supervision of the management or employer.

Although these employees were paid strictly on the piece basis, the Supreme Court of the United States held that they were entitled to wages specified by the Fair Labor Standards Act.

Questions and Answers

Legal Editor: A competitor who adjoins my land has during his operations for several years when excavating gravel run water and refuse toward my land and thereby built a dam which interferes with free and lawful use of my land. Can he do this in operation of his business? S. G. Company.

Answer: In pages of PIT AND QUARRY you will read my digests of many law suits involving the same law in which you are interested. You can recover damages from anyone who erects any structure, as a dam, which interferes with lawful use of your land.

Therefore, if another riparian owner is using water illegally, the court will grant an injunction against such use.

If the user violates the injunction and causes more damage he is subject to payment of a heavy fine for contempt of court. See *Wutchanna Water Company v. Superior Court*, 12 P. (2d) 1033.

Also, see *Kitchen Company v. Tallassee Power Company*, 174 S. E. 427, where certain property owners sued a power company for damages alleging that the company negligently used and operated its dam. This court stated the following law:

"The general principle regulating the liabilities with regard to the escape and overflow of water, seems to be as follows: Where the owner of the land, without willfulness or negligence, uses his land in the ordinary manner of its use, he will not be liable for damages; but where for his own convenience, he diverts or interferes with the course of a stream, or where he brings upon his land, water which would not naturally have come upon it, even though in so doing, he acts without willfulness or negligence, he will be liable for all direct and proximate damages, unless he can show that the escape of the water was caused by an agent beyond his control, or by a storm, or the act of God..."

Legal Editor: I purchased a piece of land some two years ago on which the oil and gas and other minerals had been sold, that is, one-fourth had been sold. Now the owners of this one-fourth of the oil and gas and other minerals have brought suit for a share of the sand and gravel I am taking from the land. Please let me have what information you have on this question.

I won the suit before the District Court, but it has been appealed and is yet to be argued before the appellate court. O.W.W.

Answer: According to a late higher court decision the reservation of "mineral royalty" in a conveyance does not include sand or gravel on the property although it is susceptible of commercial production and use.

For illustration, in *Beck v. Harvey*, 164 Pac. (2d) 399, it was shown that the owner of land sold it but in the deed was a clause reserving to the seller the "mineral royalty on said premises".

Later the legal question arose whether a contract was valid by the terms of which the seller granted the right to a company to remove sand and gravel from the premises. In other words, the court was asked to decide whether "mineral" rights include sand and gravel. The higher court held in the negative, saying:

"Sand and gravel is not mineral within the terms of conveyances, grants and leases...While commercial gravel belongs to the mineral kingdom and is similar by nature it is not regarded as a mineral."

Also, see *Waring v. Foden*, 1 Ch. 276, 86 A.L.R. 969, where the higher court held that gravel is not a mineral.

And, again in *Praeletorian Diamond Oil Ass'n v. Garvey*, Tex. Civ. App., 15 S. W. (2d) 698, the higher court held that the right to take gravel would not follow the conveyance by lease of all the oil, gas and other minerals in and under the real property or land.

TRAFFIC News Digest

CENTRAL FREIGHT ASSOCIATES DOCKET

Docket 84431—Establish a rate of 198 cents per net ton from Chicago, Ill., to Winchester, Ind., on slag, crushed or crushed commercial (not granulated) a product of iron and steel, blast or open-hearth furnaces, in bulk, carload, to apply in closed equipment only, minimum weight 90 percent of marked capacity of car except that when car is loaded to full cubical or visible capacity, actual weight will apply. Rate subject to ExParte 162 and 166 increases.

Docket 84436—Establish on agricultural limestone, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from North Vernon, Ind., to Washington, Ind., 82 cents per net ton, subject to ExParte 162 and 166 increases.

Docket 84442—It is proposed to establish on crushed stone or stone screenings, straight or mixed carloads, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity actual weight will apply, from Eckerty, Ind., to Huntingburg, Ind., 66 cents net ton, subject to ExParte 162 and 166 increases. Proposed rate will apply only on traffic moving in open-top cars.

Docket 84447—Slag, crude or crushed (the product of iron and steel furnaces), unsuitable for the further extraction of metal, in bulk in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible capacity, actual weight will apply. Cancel present commodity rates on, to Port Colborne, Ont., from Bessemer, Clairton, Duquesne, Etna, Hays, Homestead, Kenney Yard, Mifflin Junction, Munhall, Pittsburgh, Rankin, Sharpsburg (Etna), South Duquesne and Wylie (Clairton), Pa., and Mingo Junction, O.—obsolete. Class rates to apply in lieu thereof.

Docket 84482 (2)—Sand (except sand, moulding, bonded—naturally or otherwise—and except ground or pulverized sand) and gravel, in open-top equipment, without tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply. Establish on from Allegany, N. Y., to Kane, Pa., 110; Mt. Morris, N. Y., 99; Fortageville, N. Y., 88; St. Marys, Pa., 110; Smethport, Pa., 77; and Warren, Pa., 88 cents net ton subject to ExParte 162 and 166 increases.

Docket 84483 (2)—Sand in open or closed cars, as described in N.Y.C. Tariff 1908 and C.&O. (PMD) Tariff 5694-K, carload minimum weight as indicated in said tariffs. Establish on from Hemlock,

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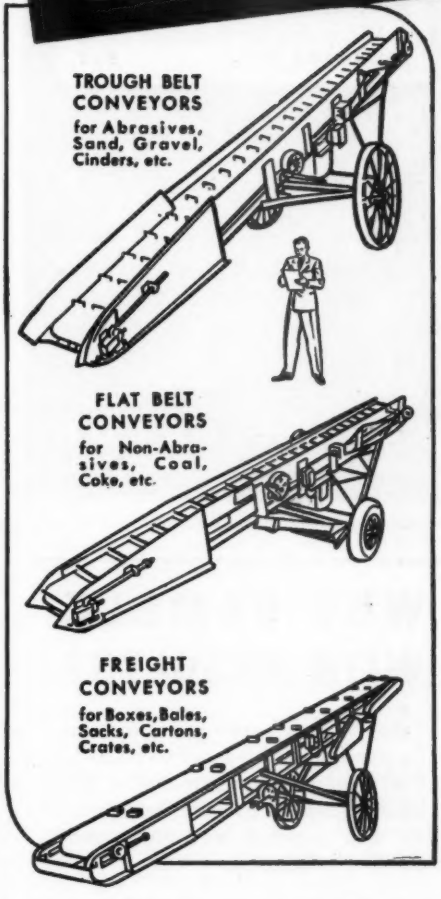
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Minco and Paines, Mich., to Manistee, Mich., in closed cars, 187 cents; in open cars 149 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84503 (2)—It is proposed to establish on slag, crushed or crushed commercial (other than granulated), in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Hamilton, O., to Yorkville, O., 193 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84513 (2)—Establish on slag, refuse, product of copper, brass, lead or zinc furnaces, having no commercial value for further extraction of metal, other than granulated, not screened, in bulk in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply, from Kalamazoo, Mich., to Wabash, Ind., 138 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84537 (2)—Stone, crushed, in bulk, open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply. Establish on, from Perkins, Ind., to LaHogue and Piper City, Ill., 84 cents net ton, subject to ExParte 162 and 166 increases.

Docket 84539 (2)—Sand (except sand, moulding, bonded—naturally or otherwise—and except ground or pulverized sand) or gravel in open-top equipment, carload (See Note 1), minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply, but orders will not be accepted for open-top cars of less marked capacity than 80,000 pounds (see Note 2). Establish on, from Canton, O., Group and Navarre, O., to New Alexandria, Pa., 165 cents net ton, subject to ExParte 162 and 166 increases. Any provisions of the aforesaid minimum weight which will conflict with I.C.C. Service Order No. 68 are suspended during the period such service order is in effect.

Note No. 1—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in closed cars will be assessed.

Note 2—When a shipper orders a car of above-mentioned marked capacity or greater, and the carriers are unable to furnish the car ordered and furnish a car of greater capacity than that ordered, the minimum weight for the car furnished will be that which would have obtained had the car ordered been furnished and used.

DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION SUBMITTALS

Docket 38808 (c)—Establish the following rates in cents per ton on gypsum rock, crude or crushed (not ground), in bulk, carload minimum 80,000 pounds:

Kingsport, Tenn.	360
Knoxville, Tenn.	400
Clinchfield, Ga.	420
Rockmart Ga., Chattanooga and Richard City, Tenn.	440
Cowan, Tenn., and Ragland, Ala.	460
Nashville, Tenn., and Boyles, Ala.	480

SOUTHWESTERN FREIGHT BUREAU DOCKET

Docket 43708 (2)—Establish rate of $1.33 per net ton on lime rock, limestone or chats, broken, crushed or ground in straight or mixed carloads, minimum weight 90 percent of marked capacity of car, except that when cars are loaded to full cubical or visible capacity, actual weight will apply, from Marlo, Mosher, and Ste. Genevieve, Mo., to Harco, Ill.

Docket 43794 (2)—It is proposed to establish on sand and gravel via Missouri Pacific route a rate of 85 cents on sand and gravel from Marquette, Mo., to Hendrickson, Mo.

TRUNK LINE ASSOCIATION DOCKET

Docket 44545—Natural stone (other than bituminous asphalt rock), crushed, not otherwise indexed by name, in Official Classification and stone dust, in straight or mixed carloads, minimum weight 90 percent of marked capacity of car, etc., from Bound Brook, N. J., to Cincinnati, O., $5.83, Cleveland, O., $4.84, and Clinton, Ia., $7.70 per net ton (subject to ExParte 162 increase), in lieu of current sixth class rates. Reason: Comparable with rates applying from and to other points.

Docket 44563 (shipper)—Crude gypsum rock, carload minimum weight 90 percent of marked capacity of car used, but not less than 90,000 pounds, from Norfolk, Va., to Martinsburg, W. Va., $2.42; Hagerstown and Security, Md., $2.53; Union Bridge, Md., $2.42; and Fordwick, Va., $2.10 per net ton (subject to ExParte 162 increase). In lieu of current sixth class rates. Reason: Comparable with rates applying from and to other points.

Docket 44585 (shipper)—Crude gypsum rock, carloads, minimum weight 90 percent of marked capacity of car used, but not less than 80,000 pounds from Edward, Ont., to Pittsburgh, Pa., $2.66 per net ton (subject to ExParte 162 increase). Reason: Comparable with rates applying to other points.

WESTERN TRUNK LINE NEW APPLICATIONS

Docket E-8-724 (Supplement 1)—It is proposed to establish on clay, crude, or ground, not otherwise indexed by name in Western Classification, minimum weight 60,000 pounds from groups 22, 23, 24 (Western Trunk Line Tariff 120-I) to Springfield, O., a rate of 32 cents per 100 pounds.

Docket E-41-906—It is proposed to establish on sand, gravel, and crushed stone, minimum weight 90 percent of marked capacity of car, except that when weight shipped loaded to full visible capacity of car is less than 90 percent of marked capacity of car, the actual weight will apply, but in no case less than 40,000 pounds from Fremont, Neb., to Carroll, Ia., 93 cents per net ton, to expire with December 31, 1948.

Docket E-41-908 — Gypsum, crude or crushed (not ground), in bulk, carload capacity of car, from Fort Dodge, Ia., to Kosmosdale, Ky. Proposed, $3.85 per minimum weight 90 percent of marked ton of 2,000 pounds.

NEWS OF CONCRETE MANUFACTURERS

$100,000 Expansion Project Launched at Selma, Calif. By Haydite Block Concern

Plant expansion involving the expenditure of more than $100,000 in equipment and construction was begun recently at the San Joaquin Haydite Concrete Products Company's facilities in Selma, Calif.

According to William Grindle, co-owner of the firm with Cliff Tinker, the addition will increase production and add new types of units to the company's present line. He added that the firm is contemplating a program whereby a five- or six-room concrete block house could be constructed in 21 working days. The partners established the business about 16 months ago. Since then they have been supplying five California counties with Haydite products.

W. C. Anderson Named to Head Marquette Credit Department

On January 1, 1948, the Marquette Cement Manufacturing Company opened a credit department at its sales offices in the Union Planters National Bank Building at Memphis, Tenn., with William C. Anderson in charge. Mr. Anderson was formerly assistant credit manager at the company's Chicago headquarters.

The new department will handle credit matters on all sales made by Marquette's Memphis Division, comprising the states of Mississippi, Louisiana, Arkansas, Kentucky and Tennessee. Mr. Anderson has been associated with Marquette since 1938.

Ohians Form Organization To Promote Better Roads

Louis Richter of Cincinnati, who heads the Richter Concrete Company and the Richter Transfer Company, has been named a trustee of the Ohio Turnpike Committee. This organization is a non-profit corporation formed to promote better highway facilities for the state.

Other trustees include the following: A. C. Neff, Middletown; Don Patterson, Lorain; Charles McKee and R. W. Sanborn, Columbus; Frank Converse, H. R. Kepinger and E. M. Green, all of Cleveland.

Pumice Men in Washington To Form New Association

Representatives of the pumice industry and related fields met recently in Wenatchee, Wash., to form an organization. A six-man committee chosen to work out plans for the organization included two spokesmen for the pumice mining industry, two for the block manufacturers and two for the construction industry.

Also attending the session were E. B. Parker, director of the Division of Industrial Service and Industrial Research from Washington State College, and M. T. Huntting, representing the State Division of Mines and Geology.

On the agenda for prompt attention were the following items: standardization of blocks, research on special problems of the industry, proper construction work and favorable public relations.

Amer. Concrete Pipe Assn. Planning Three-Day Session

Initial plans for the 40th annual convention of the American Concrete Pipe Association call for a three-day session in March at the Hotel Roosevelt, New Orleans, Louisiana.

Howard F. Peckworth, managing director of the association stated that registrations and preliminary meetings will take place on Thursday, March 11, and the grand opening reception will be held at 5 p. m. Formal meetings and the annual banquet will be held on Friday and Saturday, March 12 and 13.

The entertainment committee planning the convention is headed by Claude Kelly, New Orleans Cement Products Co., Inc. Other committee members are Buddy Kearney (J. W. Kearney & Sons) and A. G. Becker (Jahnke Service, Inc.).

Universal Concrete Pipe Co. Holds Two-Day Conference

Plant superintendents and other key men associated with the Universal Concrete Pipe Company's facilities in 15 cities were present at a two-day conference held recently at Columbus, O. Highlighting the meeting was an address by President H. X. Eschenbrenner.

Those responsible for the arrangements were C. Ray Wilhelm, assistant general manager, and W. E. Bishop, treasurer.

Coming Events

February 23-26, 1948 — Denver. 44th annual convention and exhibits, American Concrete Institute, Shirley-Savoy Hotel.

February 26-28, 1948 — Roanoke, Va. Annual convention, Sand-Lime Brick Association, Roanoke Hotel.

March 1-3, 1948—New York. Annual convention, National Concrete Masonry Association, Hotel New Yorker.

March 11-13, 1948—New Orleans. 40th annual convention, American Concrete Pipe Association.

United Concrete Pipe Co. Building Large Plant At Stockton, California

A site on Highway 99 north of Stockton, Calif., has been chosen by the United Concrete Pipe Company of Baldwin Park, Calif., for the location of its $1,000,000 concrete pipe plant. Construction has begun on the plant, which will cover 30 acres of the 60-acre tract.

It is expected that the new facilities will supply pipe to cities within a radius of 150 miles. Stockton was chosen by the firm because of its location in the center of a growing industrial area and because of the transportation facilities available.

New Firesafe Plant Opened By Pumice Products Company

The newly-rebuilt plant of the Pumice Products Company, located on the site of the former facilities at Boise, Ida., went into production on December 1, 1947. Built entirely of the pumice blocks, the plant replaces the $40,000 frame structure which was razed by fire last August.

The blocks are made of the material supplied by a pumice pit owned by T. C. Smith, proprietor of the business, at Idaho Falls. Mr. Smith stated that several sizes of units would be made, as well as chimney blocks. There is a high demand for these products in this area, due to their insulating and fire-resistant qualities.

Fires Cause Extensive Damage At Two Concrete Block Plants

Two concrete block plants in the Midwest were recently damaged by fires. At the Buck Creek Block Company, Muncie, Ind., a loss of $10,000 was estimated—$6,000 to equipment and $4,000 to buildings.

At the K. C. Dobson concrete block works, Bay City, Mich., a faulty heater set off a blaze causing damages of $2,200 to tools, equipment and building. The main structure, a block making machine and 120 gallons of gasoline were saved from the flames.

Concrete Block Division of Senn Corp. Sold to W. G. Wilson

A new firm, the Wilson Concrete Block and Supply Company, was formed in Indianapolis when Wilbur G. Wilson purchased the block division of the Senn Corporation.

Mr. Wilson was formerly an instructor in the Air Forces School at Butler University and more recently has been associated with the United States Rubber Company. O. M. Moore is factory superintendent.

Stephen Flam to Retire As Business Is Sold to Besser Manufacturing Co.

Stephen Flam, prominent in the growth and development of the concrete-products industry, has announced his retirement, at the age of 63, after over 40 years devoted to that industry. A

Stephen Flam

Californian since 1914, "Steve," as he is affectionately known to his host of friends, is widely recognized for his important contributions to modern block-making equipment, particularly in the field of vibration, which he pioneered.

Mr. Flam began making concrete block in his native Schenectady, N. Y., in 1908 and in 1910 organized the Schenectady Cast Stone Co., which is still in existence. After disposing of his interests and moving to southern California, he engaged in the production of concrete building units at Van Nuys, Glendale and other communities in the Los Angeles area for several years, meanwhile experimenting with vibration as a means of uniformly compacting the concrete in the mold-box. Perfecting the process and applying for patents in 1924, he began commercial manufacture of vibrating equipment. These efforts culminated in 1928 in the introduction of the Flam line, which achieved long-lasting popularity. Down through the years thousands of Flam machines were sold and, in the West particularly, they played an important role in building the empire along the entire Pacific slope.

From a few employees in the '20's, the Flam manufacturing organization had grown to 175 by 1946, when the concern moved into its new and modern plant in Van Nuys, Calif. In November, 1946, Mr. Flam disposed of the business in its entirety to the Besser Mfg. Co. of Alpena, Mich., the Besser concern having (since 1938) employed the Flam patented method of vibration in its line of Besser Vibrapac machines on a royalty arrangement.

Mr. Flam's plans call for considerable time for leisurely travel in the immediate future. Accompanied by Mrs. Flam, he spent a most enjoyable vacation in Alaska last summer and this year they are looking forward to visiting the Hawaiian Islands.

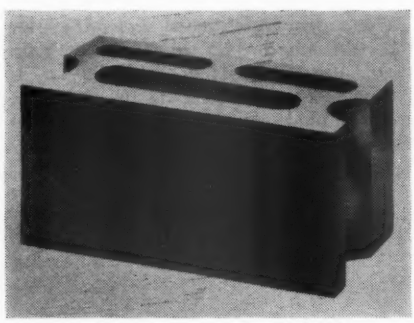
Mr. Flam's son, Bernard, a Navy veteran and engineering graduate of California Institute of Technology, was closely associated with his father in recent years in the development of concrete-products equipment. He is carrying on in the family tradition through the establishment in Van Nuys of a new concern, Flam Concrete Industries.

Florida Concern Develops New Furred Masonry Unit

A new type of concrete masonry unit has been developed by a Florida block manufacturer which is said to effect a material reduction in construction costs by eliminating the necessity of furring. Manufactured under the trade name Redi-Furred block, the new unit comes in standard modular sizes, incorporating an integral concrete furring strip and an extra longitudinal air space (see cut).

In addition to speeding up construction by the elimination of furring and lathing, the new units are reported to effect a 25 percent reduction in heat transfer as compared with standard 3-cell blocks. The unique cell layout of the units is also said to simplify the installation of electrical and plumbing fixtures. The blocks are being made in the following sizes; 8 by 8 by 16, 4 by 8 by 16, 8 by 12 by 16, 4 by 12 by 16, regular corner and jamb blocks, and ¼, ½, and ¾ increments of these sizes.

One of the more striking applications of Redi-Furred units is in the Tilton Terrace apartment house project now



• Parallel longitudinal air spaces make for ease of handling, prevent vertical splitting and discourage straight travel of moisture or frost.

under construction at Madison, Wis. The project consists of 36 buildings of 6 apartments each, requiring a total of 220,000 cinder units. Madison Redi-Furred Block Co., has the contract to supply the masonary units.

The Redi-Furred block was developed by F. C. George of Orlando, Fla., for production on the George hydraulic Press Pac block machine.

Robert L. Jerome, who formerly operated a concrete block business at Warren, O., died at a hospital in that city on December 21.

Reinhold Sees Good Year Ahead in 1948 for Anchor Concrete Products, Inc.

Increasing demand for masonry concrete products will lift 1948 business volume of Anchor Concrete Products Inc., Cheektowaga, N. Y., by 50 percent over 1947, President Frederick W. Reinhold declared. The company's volume this year was estimated by Mr. Reinhold at $800,000. "It should reach $1,250,000 next year," he stated.

Anchor Concrete's new $350,000 plant in Cheektowaga was opened in June. (See PIT AND QUARRY, June, 1947, p. 111.) Work now is nearing completion on an $85,000 addition which was started a short time ago. Another $50,000 will be spent during the first half of 1948 for trucks and other transportation facilities, Mr. Reinhold said.

"For the first time in our history we will maintain a night shift through the winter to build up inventories to help meet the normal spring bulge in building," he said. "We also expect to maintain the night shift through 1948. We now employ about 75 workers but will increase our force to 90 by March."

Mr. Reinhold said he believes prices of masonry concrete products have hit their peak. "Our prices," he added, "are only about 20 percent above 1933 levels."

Indiana Father & Sons Firm Develops 3-Way Operation

A firm which went into business in Middlebury, Ind., primarily for the manufacture of concrete block—Freed Hershberger & Sons—has now undertaken to process the materials needed for the units and to add ready-mixed concrete to its line.

Associated with Mr. Hershberger are his sons, Calvin, Junior and Donald. In 1946, the year after the business was founded, a complete gravel washing and screening unit was installed for the processing of five sizes of gravel and sand. The addition of new washing equipment is contemplated. Last year the Hershbergers added ready-mix to their products.

Spokane Concrete Concern Installs $25,000 Mix Plant

At Spokane, Wash., the Central Concrete Pre-Mix Company has installed a $25,000 ready-mix plant at its gravel operation.

Herbert Sullivan, head of the concern, stated that the plant would be in operation by March 1. The new equipment is of the portable type which can be moved to any location where materials are available.

A. L. Barker recently sold his interest in the Bilt-Rite Block Company, and the B. C. Builders, located at Baker, Ore., to W. O. Beeson. The latter is superintendent for the B. C. Builders.

PROGRAM

NATIONAL CONCRETE MASONRY ASSOCIATION

28TH ANNUAL CONVENTION

March 1-3, 1948

HOTEL NEW YORKER, NEW YORK CITY

MONDAY, MARCH 1

8:30 A.M. Registration all day...Ball Room Foyer

(NOTE: Registration desk will be open on Sunday. Those in attendance on Sunday are urged to register than and avoid the rush)

Ladies are requested to register with Ladies Reception Committee...Parlor C

10:00 A.M. Convention opens...Grand Ball Room
Presiding: Henry E. Buchholz, President

President's Address

Report of Treasurer
Report of Executive Secretary

Report of Nominating Committee
(five new directors to be nominated)

Election of Directors
Announcement of Thomas W. Noble Award
Deane R. Lynde, Chairman, N.C.M.A. Board of Directors and Chairman of Noble Award Committee

The Concrete Masonry PICTORIAL
John W. Shaver, Editor

Concrete Masonry Units as a Structural Building Material in New York State
E. M. Fleming, Manager, New York Office Portland Cement Association

Where Do We Go From Here?
Paul M. Woodworth, Director of Research, Waylite Company, Chicago, Illinois

2:00 P.M. Panel Discussion on Aggregates
Presiding Officer: Horace W. Bush, Multiplex Concrete Co., East Orange, N. J.

Discussion leaders will be announced. Each discussion leader will briefly summarize the supply situation, new research data, new developments, etc., regarding his type of aggregate. Meeting will be open to questions from the floor.

TUESDAY, MARCH 2

10:00 A.M. Presiding: (to be announced) N.C.M.A. Technical Problems Committee

Overhead Conveyor System for Yarding and Loading Block Cubes
Harold Pratt, Barnes & Cone, Inc., Syracuse, N. Y.

Mechanical Unloading of Block Cubes from Trucks
John P. Sheehan, The Atlas Lime Company, El Paso, Texas

Increasing Plant efficiency with Portable Turntables
Jack Crabbs, Austin Crabbs Inc., Davenport, Ia.

Maintenance Practices with Hard Facing Welding and Chromium Plating
Jay C. Ehle, Cleveland Builders Supply Co., Cleveland, Ohio

The Problem of Shrinkage Cracking
R. E. Copeland, Director of Engineering, N.C.M.A.

2:00 P.M. Technical Session
Presiding: Jay C. Ehle, Chairman, N.C.M.A. Technical Problems Committee

Today's Problems and Costs in Building Concrete Masonry Homes
John Strandberg, Jr., Contractor, Kansas City, Mo.

Construction Requirements for Concrete Masonry
Leonard G. Haeger, Technical Director Housing & Home Finance Agency, Washington, D. C.

Plant Safety — Industry's Opportunity and Responsibility
Ivan LeGore, Assistant Manager, Accident Prevention Bureau, Portland Cement Assn., Chicago

Should Our Industry Have a Safety Program?
Cloyd B. Fellabaum, Chairman, N.C.M.A. Accident Prevention Committee

7:00 P.M. Banquet and Entertainment, Grand Ball Room—Informal. Dancing until Midnight. Procure tickets at Registration Desk, $7.50 per plate.

Ladies Sightseeing Trip

10:00 A.M. Personally escorted buses will leave Hotel New Yorker at 10:00 A.M. Lunch will be served enroute at LaGuardia Airport. Return to Hotel about 4 P.M. Procure tickets at Registration Desk — $6.50 each including luncheon.

WEDNESDAY, MARCH 3

8:30 A.M. Registration to 12:00 Noon

10:00 A.M. General Session
Presiding—President Elect

Report of Progress in the Training of Apprentices in the Building Trades with Special Reference to Bricklayer Apprentices
Maurice M. Hanson, Assistant Director Apprentice Training Service, Department of Labor, Washington, D. C.

New Developments in the National Concrete Masonry Association Plan Service
C. A. Sirrine, Loree & Sirrine, Architects, Ann Arbor, Michigan

The Industry Engineered House and Modular Coordination of Building Materials
A. Gordon Lorimer, Consultant, Producers' Council, Washington, D. C.

The Overall Program of the Producers' Council ti Lower the Cost of Building and Improve Quality of Construction
David S. Miller, President, Producers' Council, Washington, D. C.

1:00 P.M. Inspection Trip—Plant of Plasticrete Corporation, Hamden, Conn.

Train leaves Pennsylvania Station 1:00 P.M., arrives New Haven 2:35 P.M.

Returning trains at frequent intervals between 4:00 P.M. and 6:00 P.M.

Complete details will be announced at Monday sessions.

Winners of Safety Contest Awarded Beautiful Plaques

Illustrated here are the safety trophies which PIT AND QUARRY presented to the two winners of the National Ready Mixed

Concrete Association's 1946-1947 Safety Contest at the recent convention in Cincinnati, January 21-23.

The contest is divided into two divisions, Class A and B, for large and small plants, respectively. The Class A winner was the Frank J. Knight Co., Cen-

terline, Mich. The Class B winner was the Grand Junction Building Materials Co., Grand Junction, Colo.

The trophies or plaques are made of heavy bronze mounted on walnut, and will last a lifetime. Similar awards will be made annually.

Concrete Masonry in '47 Repeated Record Output of a Billion Units

Plant Population Declined Somewhat but Output Per Plant Shows Large Increase. Cost Line Held by General Step-Up in Man-Day Output

By WILLIAM M. AVERY

DESPITE a distressingly slow start in the early months of the year, the concrete masonry industry very probably turned out close to a billion 8-inch equivalents during the year just closed. Not until sometime in May of 1948 would accurate figures become available with which to confirm or disprove this estimate of output, but most observers felt that the industry's production in 1947 could not have been appreciably less than the 1946 total of 940,000,000 units.

According to Bureau of the Census figures for 1946, almost 3,800 plants, including all known producers employing one or more wage earners, were in operation at some time during that year. Of the total block output 50 percent was reported as having been made from heavyweight aggregate and 41 percent from such lightweight materials as cinders, expanded slag, shale and clay, pumice and perlite. How closely the 1947 output had adhered to this pattern was anybody's guess, but it was fairly certain that the proportion of lightweight units had not increased materially in spite of the urgent demand. The best that could be said in regard to increasing the supply of lightweight aggregates was that a lot of effort was apparently being expended in that general direction; tangible results during 1947 were conspicuous by their absence.

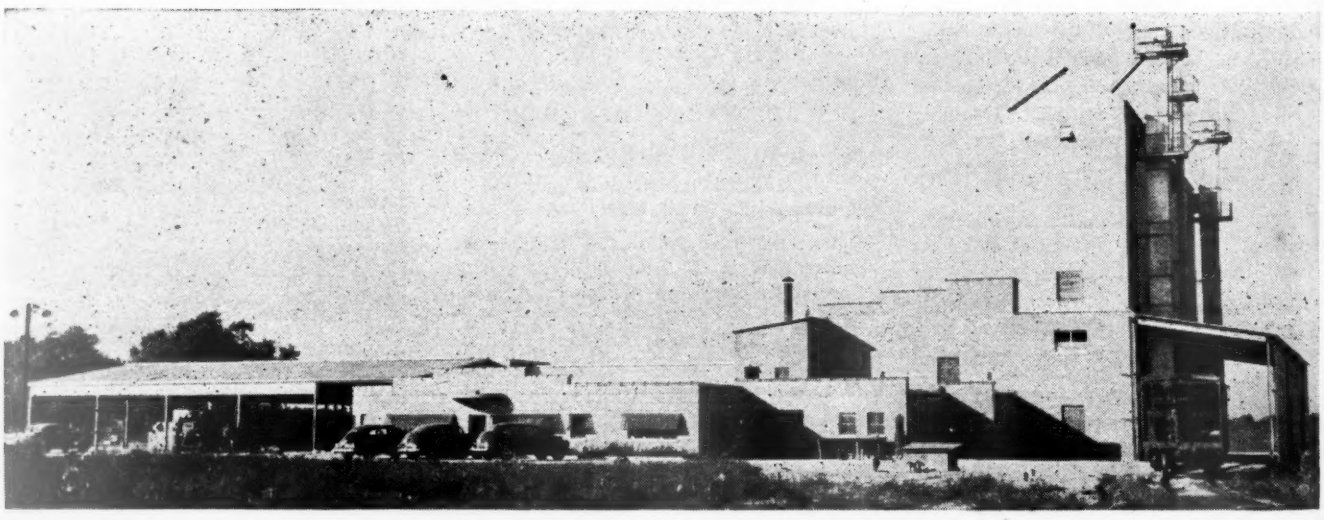
One of the $64 questions concerning the block industry in 1947 had to do with the number of plants in operation. The Census Bureau's 1946 figure of 3,800 plants was considerably short of the number estimated by other reliable sources, but whether the actual figure was 5,000, 7,000 or 9,000 was wide open to debate. In any case, the number of plants must have dropped materially by the closing months of 1947. In some large urban areas as many as 50 plants "folded" between January 1 and December 31, and there were indications that the weeding out process would continue on a reduced scale well into the new year.

In view of this fact it was pertinent to ask how the industry had maintained its 1947 output at the same level as in 1946. The answer appeared to be that attrition and expansion went on simultaneously throughout most of the past year. While inefficient, low-production plants were folding right and left, efficient operators were expanding their capacity, with the net result that by the end of 1947 the industry's total block-making capacity, despite the elimination of perhaps 500 plants, had actually shown a net increase.

This trend was evident even in the statistics for 1946, which showed that 63 percent of the total number of plants reporting had accounted for only 15.3 percent of total production, while 37 percent of the plants accounted for 84.7 percent of total production. Among plants producing 2,000,000 or more units annually, 3 percent (or 100 plants) accounted for 29 percent of total output. These figures showed that a mere handful of plants (328) were turning out 54 percent of the masonry units sold in the United States.

On the face of it, average output per plant must have increased considerably during 1947, and a further increase would undoubtedly be chalked up in 1948. Somewhere along the line the trend would probably be checked by purely economic considerations. Well-equipped and efficient small plants were still able to slug it out toe to toe with larger establishments, and many of the Goliaths were uneasy over the possibility that the boom might end before they had liquidated at least a reasonable share of their huge capital investments.

Despite the tremendous unfilled demand for structures of every type, the industry's prospects in 1948 are almost impossible to judge. With brick masons in some localities demanding (and apparently getting) wages as high as $45 per day, there was some cause to fear that the building boom might collapse at any moment. Since the same fear was widely expressed in the opening months of 1947, there was always a chance that the "view with alarm"



• One of 1947's outstanding new plants was Illinois Brick Company's No. 2 establishment, located at Blue Island, Ill.

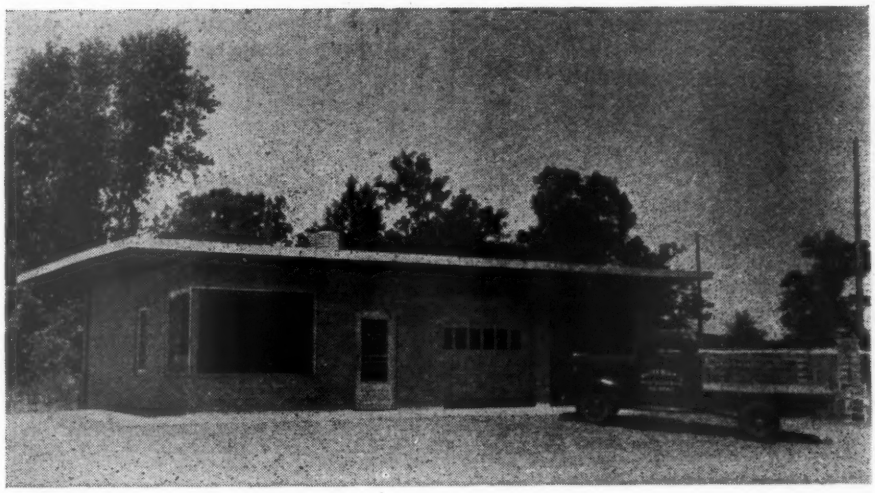
fraternity was still doing business at the same old stand. But there was no longer any widespread assurance that builders would indefinitely persist in trying to build with 40-cent dollars, and the amount of building you could do with a given sum was declining at a frightening rate. Somewhere along the line the brakes would inevitably be applied, and on the basis of any fair appraisal it could easily happen in 1948.

By and large the concrete masonry industry had done an excellent job of keeping its own house in order during the general scramble to increase prices. From 1941 to the close of 1947 the price of concrete units had increased less than 20 percent in spite of an increase of more than 50 percent in hourly wages. This was a certain indication that most producers had in effect passed on to their customers the savings brought about by increasing output per man-day. It was, however, a little bit like saving at the spigot while someone else spends at the bung hole, since the industry had no direct control over the ultimate "in place" cost of its product. From a competitive standpoint, however, other materials were even more drastically affected by high wages and low output in the construction field, and the block industry could accordingly find some comfort in the knowledge that so long as building continued in any volume there would be a steady demand for masonry units.

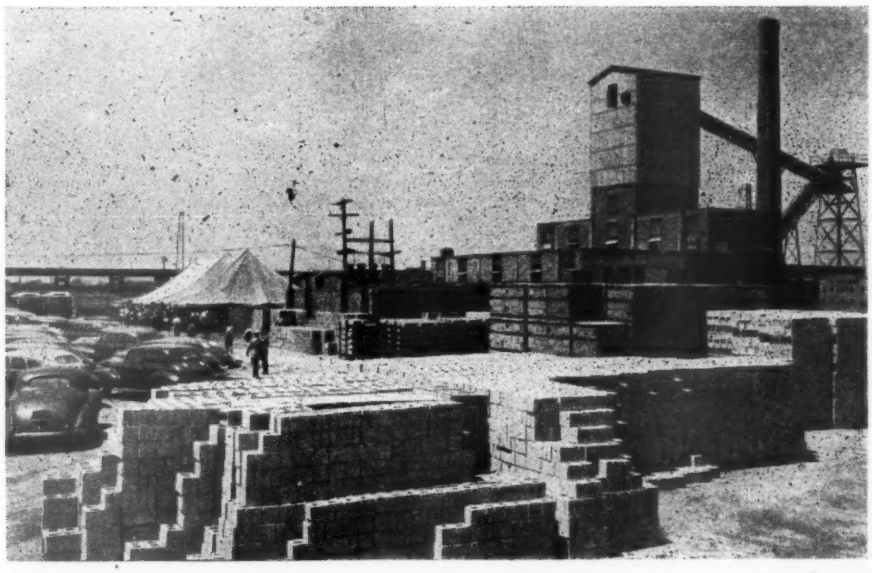
In some sections of the country (notably the Deep South and the West Coast) 1947 saw a repetition of the cement shortage which caused so much distress in 1946. Since the full impact of the '47 version was not apparent until late in the year, it seemed probable that the overall effect on block production was not as drastic as in '46. New cement-making capacity undoubtedly lessened the distress to a considerable extent, and there was good reason to believe that by mid-1948 cement output would be sufficient to prevent any acute shortage from developing late in the year. Although in a few isolated cases some block production was lost due to a shortage of aggregates, by and large the supplies were adequate. At any rate almost all block makers were able to obtain sufficient quantities of *some* sort of aggregate—although it was in many cases not precisely what they preferred to use.

Early in 1947 the 27th annual convention of the National Concrete Masonry Association at Chicago set new attendance records,

• Among the important and significant developments during the year was this well-equipped laboratory built by Plasticrete Corp., Hamden, Conn. Representing an expenditure of approximately $30,000, the lab. is equipped to test units for almost all A.S.T.M. specifications.



• An instance of smart merchandising noted in 1947 was this attractive combined office, salesroom and garage built by the Master Block Company, Minneapolis, Minn., using its own masonry units. In addition to its excellent inherent advertising value, the building helps customers to visualize the finished effects they may obtain with concrete block.



• Anchor Concrete Products, Inc., Buffalo, N. Y., dedicated its new $350,000 block and Flexicore plant at an open house held in June. This company also announced plans for a complete testing and development laboratory to be erected adjacent to the new plant.

with some 3,000 producers and guests officially registered. This occasion also marked the first post-war appearance of the Concrete Industries Exposition. More than 50 equipment manufacturers had exhibit booths and a considerable number displayed late models of their machines.

A good index to the general health of the concrete masonry industry was to be found in N.C.M.A.'s 25 percent membership growth in 1947. The association's expanded activities on many fronts were yielding results worth several hundred times the total of membership dues. At the close of 1947 the membership included more than 550 of the country's foremost producers, and the influence and authority of the association were correspondingly greater than at any time in its history.

Curing was still one of the industry's foremost problems at the close of the year, but some rather definite answers were beginning to evolve. During the year N.C.M.A., in cooperation with F. Hurlbut Co. (Green Bay, Wis.), Cleveland Builders Supply Co. (Cleveland, O.), and Plasticrete Corp. (Hamden, Conn.), carried out extensive tests on the effect of variations in curing temperatures and cycles on the compressive strength of block. Included in the studies were sand-and-gravel, Celocrete and cinder units.

The tests indicated that optimum curing can be accomplished in the temperature range of 165 to 175 deg. F., and that there is no significant advantage in higher temperatures. Block cured at 160 to 180 degrees were lighter in color than those cured at 130 or 140 degrees, but compared favorably in this respect with block cured at 200 degrees. At 170 degrees curing temperature, block showed greater resistance to handling breakage than at 130 degrees, but there seemed to be no additional gain as a result of increasing temperature to 200 degrees. Other conclusions from the tests: the steam-on period should be not less than 3 hours, or 1 hour longer than the time required to attain maximum temperature; the rate of temperature rise in the kiln should not exceed 60 deg. F. per hour; the holding period should be approximately 2 hours; the soaking period should be not less than 8 hours and longer if practicable. Low-pressure steam (10 to 15 p.s.i.) seemed to produce the best results in curing heavyweight units, but somewhat higher boiler pressures were found to be permissible with lightweight units.

So far no one had gone on record as urging high temperature curing as the only satisfactory method, but used in combination with a 3- to 6-hour drying cycle at 180 deg. F. there was abundant evidence to indicate that high-temperature cycles produced block which could be delivered immediately or soon after removal from the kilns. There would unquestionably be more investigations in the realm of accelerated curing during 1948, and the whole picture strongly indicated that the answers to the controversial problem of curing would come through evolutionary, rather than revolutionary processes.

In the machinery field 1947 produced some significant changes. For one thing, the block makers themselves rebelled against some of the junk that was being sold as molding equipment. The machine manufacturers found themselves back in a competitive market, and a fair number of them quietly folded their tents and stole silently into the night. Those who stayed developed new models along precision lines which turned out more units per man-day with somewhat less physical effort. Several new plain-pallet machines made their appearance during the year, and for at least one of these a record high output of 15 to 18 units per minute was claimed. The machine makers were evidently giving heed to the block makers' demand for cost-reducing equipment, but there was some feeling that at least in respect to molding equipment the cycle had about run out.

In respect to the over-all efficiency of their operations block manufacturers felt that the greatest gains could be made in respect to yarding techniques. During 1947 many plants installed power yardhoists, and more operators began cubing their output to gain increased storage capacity and to speed up the loading of delivery truck. At least one large operator in the East built a covered storage area with an overhead crane for handling cubes.

Some progress was noted during the year in the sales promotion field. More producers tied their sales efforts in with the Portland Cement Association's excellent national advertising campaign, and there were other indications, too, that the block industry was developing some cageyness with respect to sales. Although 1947 had not been in any strict sense a buyer's year, block makers actually "sold" a larger proportion of their output than had been the case for several years, and the customer was no longer regarded as a rather tiresome nuisance. There was still lots of room for improvement, but at least the industry was no longer taking it for granted that builders would buy its product automatically.

There were probably fewer new plants built during 1947 than in the preceding year, but existing plants were expanded and improved at an impressive rate. Improvement programs in most cases were directed at increasing output with existing

(*Continued on page 137*)

TABLE 1.—Average Number of Man-Hours Required to Produce 1,000 Concrete Blocks, 1946[1], by Rate of Production

Monthly Rate of Production (8x8x16 Equivalent Units)	Number of Plants	Man-hours per 1,000 Blocks				
		Total	Manufacturing	Yard	Overhead	Administrative
All plants	50	30.2	10.6	9.9	5.6	4.1
Under 50,000 units	9	74.5	27.8	24.1	7.4	15.2
50,000-149,999 units	17	38.0	13.6	12.8	6.0	5.6
150,000-249,999 units	14	30.9	10.9	10.6	5.5	3.9
250,000-349,999 units	5	26.9	9.8	9.5	4.5	3.1
350,000 units and over	5	23.1	7.6	6.7	5.8	3.0

[1] Does not include man-hours required for preparation of aggregates or transportation of finished product

TABLE 2.—Man-Hours Required for Various Operations in Production of Concrete Block, 1946

	Man-hours Required in Manufacture of Concrete Block, 1946[1]	
	Total	To Produce 1,000 Blocks
Proportioning and mixing	20,876	2.4
Machine molding	46,382	5.3
Hauling	24,872	2.9
Yard	85,958	9.9
Maintenance	21,377	2.5
Superintendents and foremen	17,704	2.0
Miscellaneous labor	9,114	1.1
Administration	35,761	4.1
Total, plant operations	262,044	30.2

[1] Does not include man-hours required for preparation of aggregates or transportation of finished product.

Application of Modular Coordination To Concrete Masonry Construction*

By ALLAN WALLSWORTH
Architect
Milwaukee, Wisconsin

COORDINATION is a new idea which is the result of many years of unselfish, unemotional constructive thought and effort. The father of the idea, Alfred P. Bemis, a successful manufacturer who became interested in housing, was appalled at the spectacle of clutter and confusion he saw in the building industry. Determined to do something about it, he established the Bemis Foundation to study the problem, and a common divisor for building was found. This unit of measurement or space is a cube 4 by 4 by 4 in., which was called the Bemis module.

Work on the subject continued and the results to date are ably presented in A.S.A. Projects A-62. Although the literature on the mechanics of modular coordination is comprehensive and we may be attracted by its ingenuity, it is essential that we examine the subject critically in relation to the history and field of the art of building. We all know the objectives of coordination would be beneficial; but we are not inclined to do things which are just good for us; in fact, we seem to be amused by them.

If we look into the history of man and building certain things are evident.

1. The building industry is like man; its evolution has been slow. We do what we do because we have been doing it a long time. We are suspicious of change and tend toward stubborn immovability regarding a new concept. The classic example is the automobile whose engineering development has been arrested by the inflexible attitude of the purchaser.

2. The development of building parallels the evolution and development of society. Buildings have always been mirrors of their builders.

3. The purposes of building have not changed materially. The objectives of primitive and modern buildings are essentially similar; modern man and his buildings are just more complex.

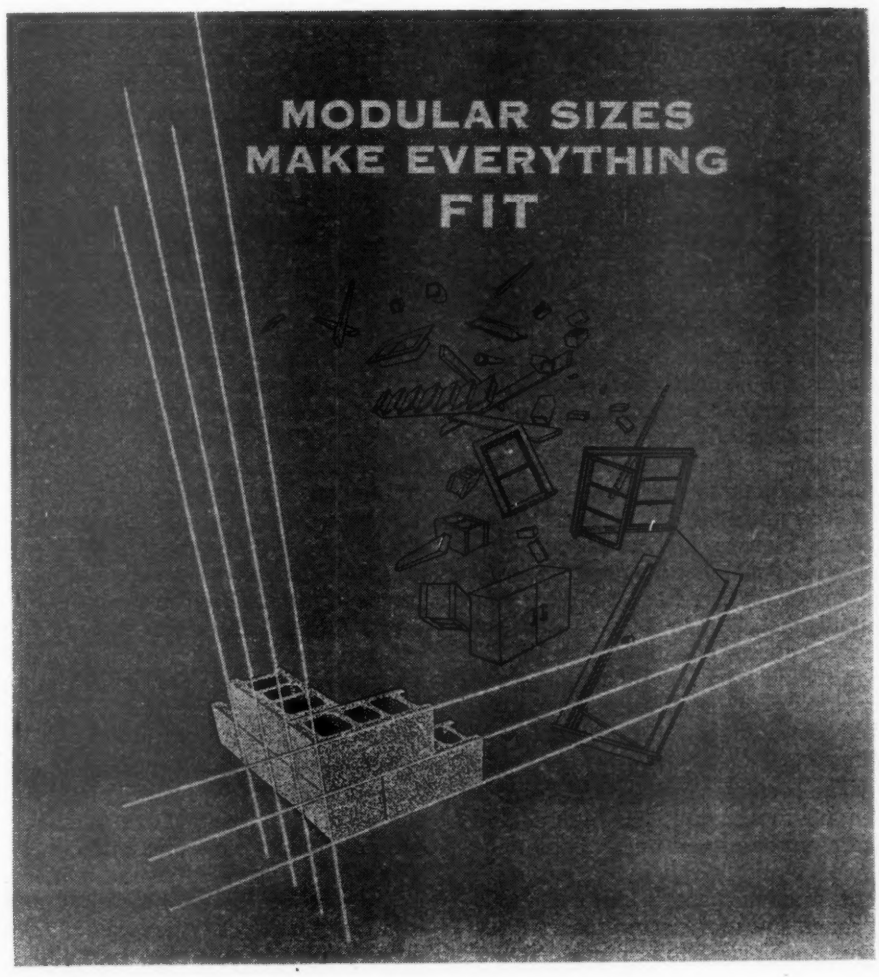
4. We are still working with the same basic materials in use before the dawn of history. There are very few materials, and the simplicity of their use is classical. The inventions or discoveries of new materials were centuries apart and not readily accepted.

Materials alone are not the basis for architecture, nor may all buildings be classified or described as architecture. Even legend does not carry us back to that era in time when the idea of beauty in form became associated with building, and architecture was created. Architecture and building have always been important to man. Architecture, politics and religion have always been controversial subjects. There is one difference, however; we might generously hold our fire regarding both politics and religion, but we do not limit ourselves on architecture. There have been few innovations and the few inventions of architectural form were centuries apart. The magnificent traditions and examples were achieved through classically direct and simple means.

In the last century the tempo of the entire world increased and the magnitude and significance of technical development have been greater than that of preceding recorded history. There are several significant contributions which have made modern design and building possible.

The Romans used concrete but the technique was lost until rediscovery recently in the 19th century.

Metal structural beams were conceived and used in bridges about the time of the Civil War and materially aided expansion of our railroads. Metal-framed structures followed. I am told that the first class in struc-



• One of the manufacturers of concrete block machinery has used this modular trade mark in its advertising to indicate how coordination makes the various units of a building fit together. Block makers could well adopt this theme in their own local advertising efforts.

*Mr. Wallsworth's paper was originally presented at the Southeastern group meeting of the National Concrete Masonry Assn. at New Orleans on November 10, 1947.

tural theory was graduated in 1892. There were no textbooks and they studied manuscripts in which was used the expression MC/I—the basis of modern structural designs.

The mathematics of the theory of flexure was discovered at the University of Vienna in 1870. No use was made of it until 1903, when the first textbooks on reinforced concrete were written by Johnson and Taylor and Thompson.

That brings us up to date. Reinforced concrete and more particularly the concrete products are the new basic building materials. They are a robust product of our age and your specific contribution to the wealth and resources of the world. However, in terms of the history of man and architecture concrete masonry has just given vent to its first painful yelp.

Capacity to design and availability of suitable materials are not self-sufficient in building. Architectural and structural quality are limited to the skill and ability of craftsmen. Labor and craftsmanship will always be the common denominator of building. They bring conception to reality.

The history of labor parallels that of society and is essentially an account of the struggle of various classes of people to emerge from the subjugation imposed upon them by more privileged classes. The struggle was especially notable in the groups of building craftsmen. Their situation and position has always been unique to a degree. Their special skills gained for them certain jurisdictions and prerogatives which they jealously guarded in various ways.

Very early they effected forms of societies or fraternities, the idea of which has carried on in various forms. The guilds followed in principle the earlier societies and achieved great economic and political power. They established admirable standards of craftsmanship and conduct and made great cultural and economic contributions to society. However, they became too powerful, selfishly restrained normal progress, and in England were formally abolished in 1335. This was the beginning of a black and dismal age for all labor. This was also the beginning of a low point in all Western culture and especially in America.

The present relatively young trade union movement has eliminated many unsound and unfair conditions and is entirely worthy in basic intent and purpose. Unfortunately, through unusual circumstances, they have achieved too much power which they use unwisely; and it will be necessary for the building trades to establish reasonable policies for the good of all. The exercise of special privilege to restrain trade and progress will create counteracting measures in the future as it has in the past.

Out of centuries of class struggle there has evolved a tradition of inflexibility and complexity in all phases of building.

Still fearful of encroachment and exploitation, labor resists expansion and modernization. Materials are produced in a myriad of sizes. There is little dimensional relation, although a considerable amount of work has been done to accomplish standardization. This confusion, added to the restrictions practiced by trade unions, constitutes a slowdown in the building industry which is especially serious at this time when our economy and way of life are in peril. To judge the performance of the building industry by dollar volume or number of contracts let, as compared to that of previous peace years is futile. Everything about our lives has changed, as have the conditions of the entire world. Nothing but high production in terms of our best efforts most efficiently applied will even approach satisfactory performance, and this is now impossible in the building industry. If we are to prevent further ruinous inflation and the probable collapse of our economic system, our building industry, second only to agriculture in economic importance, had better get busy and perform.

To examine in detail all of the factors contributing to this deplorable situation would be endless but we can look at some of them.

In the planning of a building many hours are expanded in coordinating elements of unrelated sizes and the adequate dimensioning of the plan. I for one have also faced the heartbreaking task of re-dimensioning an entire plan because the units delivered did not conform to the sizes of units selected. When this work involves fractional increments there is high probability of error. Add to this the human factors of fatigue, impatience, economic pressure and plain ordinary buck passing, and the clutter and confusion is well on its way.

We have all seen parts and elements of buildings reworked because the myriad of factors were not coordinated into workable assemblies. The effort expended by all parties in just the coordination of elements in a small house is considerable, and on any job the cost of a committee of mechanics studying the problem of building an unworkable detail is considerable at present wage rates.

In my opinion the most effective impediment to production in building construction is the present necessity for a 6-foot rule, without which no mechanic is considered well dressed. If production workers were required to measure for every assembly operation, the production of automobiles would be as pitiful as that of buildings.

The contractor is now the end man and must take everything handed to him and work it into a building.

The public is being informed in detail of the clutter and confusion in the building industry. *Popular Science,* in a short, direct and effective article, presents the sordid picture, together with its cure—coordination. *Collier's* has covered the entire field in the last two issues. We can no longer be complacent and satisfied to muddle along.

The building industry is a huge, powerful machine—safe, sound, and capable. To even think of radical change is futile but we are not operating smoothly, efficiently or at capacity. We are like a fine automobile perfectly engineered, carefully built of the best materials but noisily lurching, coughing, shaking, and going nowhere, obstructing traffic, and a curiosity to the people who pause wondering at the incongruity of the piteous spectacle.

The building industry, like the automobile, needs only an adjustment.

The condition diametrically opposed to confusion is order, and order can be accomplished by coordination. But coordination is just a broad word until it is related to something—and this in building is measurement. "Coordination is harmony in the relation of size for interfitting parts" is the definition adopted by the A.S.A. Projects A-62.

Modular coordination will permit everyone to work and everything to be worked to the same unit of measurement. Everything will work because everyone will use the same unit of size. It would be necessary for the architect to subdue his selfish urge for personal expression in return for the pure pleasure and satisfaction of getting jobs done. He would also be inspired to think in terms of the broader aspects of architecture for the benefit of everyone. He would learn to converse with the building industry in a simple, universal, practical language. As an architect, I can state that this

(*Continued on page* 137)

First Post-War British Building Exhibit Features Concrete Products, Equipment

BRITAIN'S first post-war building exhibition, normally held annually, was staged this winter for the first time since 1938, and filled the Grand and National Halls of London's Olympia exhibition buildings from November 19 to December 4. Nearly 400 exhibitors took space. The exhibition attracted a record attendance of about 165,000 people. Every kind of material and service for the building industry was on show, from concrete blocks and aluminum scaffolding to air-conditioning equipment.

By ALFRED A. RYNER

Concrete products of various kinds were prominently shown, some of them quite novel, but the conventional hollow building block, as used in the United States, was notable in its absence; concrete block as a building material has yet to establish itself in Europe, in a field largely dominated by clay brick. Standards for concrete blocks have been laid down by the British Standards Institution, but the strength requirements are low, and current types of block show a great variety in wall thickness and cavity design. Indications are that for home construction, the most popular type of block will have nominal dimensions of 4½ by 18 by 9 in. high, a modular size corresponding to six English bricks; it will have a number of small cavities not extending right through the block, leaving a plain top surface on which the mason can lay a full bed of mortar. Such blocks can be used for internal walls, when made of light-weight concrete, or can be used for external cavity walls built in two leaves with a continuous air space between.

A number of special designs of block were exhibited, for which patent protection has been obtained or applied for. One of these is the Brydon channel block, which is made in heavy concrete in the form of a shallow channel section, the channel being placed vertically. Each block measures 24 by 4 by 12 in. high, and weighs 50 lbs. They can be used to build continuous cavity walls, the channels facing toward one another, with the flanges overlapping. The width of cavity can be adjusted as required. The wall can be built with a very large cavity which can afterwards be filled with poured concrete, the channel blocks acting as permanent form-work. The same blocks can be used as slabs or filler blocks for floor or roof construction, and can also be used (with suitable steel) to build lintels.

M. B. Acheson Ltd. exhibited their "Speed Blocks" (Fig. 1) in both heavy- and light-weight concrete. These are made in the 4½- by 9- by 18-in. size with 16 cavities separated by unusually thin walls. There are 12 small and 4 slightly larger cavities per block, none of them extending right through, so as to leave a full mortar bed. There is a continuous membrane the full length of the block between the two rows of cavities, which are arranged in such a way that the block can conveniently be cut into quarter, half or three-quarter lengths. The blocks are produced on machines of Swiss origin which make four blocks at a time by a semi-automatic process. The blocks are consolidated by vibration and are stripped by inverting the moulds on plain wood pallets measuring 42 in. by 12 in. When made with heavy aggregate, each block weighs 31 lbs. and has a minimum compressive strength of 1,000 lb. p.s.i. The machine also makes floor filler blocks, either 18 in. or 12 in. long, the latter being produced six at a time.

Several types of precast reinforced chimney tops were shown by Konquest Products Ltd. These have cast-in air passages which, it is claimed, always induce an updraft in the chimney, from whichever direction the wind may be blowing. This firm also offers Tudor paving tiles of colored concrete made to resemble four small bricks, 1¼ in. thick, arranged in staggered formation. With these it is possible to lay antique-style garden paths in herringbone and other patterns at small cost.

The "Casco" concrete joist made by the Cambridge Artificial Stone Co. is unusual in having a layer of nailable concrete applied to its top and bottom surfaces. The nailable concrete is made with a mixture of foamed slag and wood dust, and makes it possible to fix floor and ceiling boards direct to the joists with ordinary nails. One-and-a-quarter-in. nails used to attach ½-in.-thick plaster boards to the soffits were found to sustain an average pulling stress of 30 lb. each, which is approximately half the load sustained by a similar nail in a wood joist. "Casco" joists are intended for domestic building and are of inverted T section, measuring 8¼ by 4½ in., and up to 14-ft. span. The manufacturer also supplies a very simple filler block of light-weight concrete (Fig. 2), in a plain arch section without cavities, which may be placed between the joists, resting on the lip of the T. A concrete floor slab can be poured on top of these, no centering or forms being required. For this type of construction, the nailable concrete is applied to the underside of the joist only.

An interesting patented product shown by the same firm is the "Dri-Crete" mortarless wall block (Fig. 3) for laying by unskilled labor. The blocks have a single square

Little is generally known in this country about the status of the concrete products industry in countries outside this continent although many of them depend largely on United States manufacturers for much of their equipment. A few of them, however, are in some ways ahead of our practice. Great Britain is apparently just beginning to realize the potentialities of concrete building units and is taking steps to develop the industry. This article on the first post-war building exhibition held recently in Great Britain gives a general picture of the types of products being made and the equipment available. The author, Alfred A. Ryner, is familiar through personal contact with the concrete products industry in the United States, Great Britain and other countries in Europe and elsewhere.—The Editor.

cavity which is horizontal when laid in the wall. The top and bottom surfaces of the blocks form a continuous tongue-and-groove running parallel to the wall, each course interlocking with those above and below. The tongue-and-groove profile is made by means of accurately-formed moulds in a conventional block machine. The ends of the blocks have a shallow groove into which a mastic compound is forced by means of a pressure gun after the blocks are laid. No mortar is used in the horizontal joints. The exposed face of the block is not vertical, but is inclined so as to give the appearance of siding, thus giving additional weather resistance and improved appearance.

The "Hyspecon" system of construction is virtually a temporary form made of cast aluminum, by means of which blocks can be cast in position in the wall. It is designed to cast units 30 in. long and 15 in. high, and to form a wall 9 in. thick with a continuous cavity 2 in. wide. Reinforcement can be cast into the wall; special moulds are available for casting corners and also for casting a single leaf wall 4 in. thick.

Of Swedish origin, the "Holco" multi-cavity block, is equivalent in volume to four bricks, its nominal size being 9 by 9 by 6 in. high. Its special feature is a large number of small cavities about 4 in. long and ½ in. wide, arranged in staggered formation and separated by ½-in. walls. Only two of the cavities pass through the block, and these form a handgrip for the mason to pick up the block.

The Marley Tile Co. Ltd. had a beautifully-designed exhibit built in the form of a Kentish coast house and roofed with their concrete roof tiles. These tiles are produced in very large quantities on special automatic machinery, and successfully reproduce the appearance of various traditional and modern types of clay roof tiles. The firm has ten branches throughout the country and produces also floor tiles, reinforced joists and other concrete products.

The Limmer and Trinidad Lake Asphalt Co. exhibited, on behalf of its subsidiary, the Insulated Concrete Pipe Co., a McCracken corrugated concrete sewer pipe, made on the well-known American equipment, and also examples of their porous agricultural drain tiles. These are made of cinder concrete in sizes from 3 to 18 in. diameter and 18 in. in length; they are made with three flat faces to prevent rolling, in the form of a half hexagon, the other half being circular. The ends are tongued and grooved. Also exhibited were hydraulically-pressed curbs and sidewalk slabs.

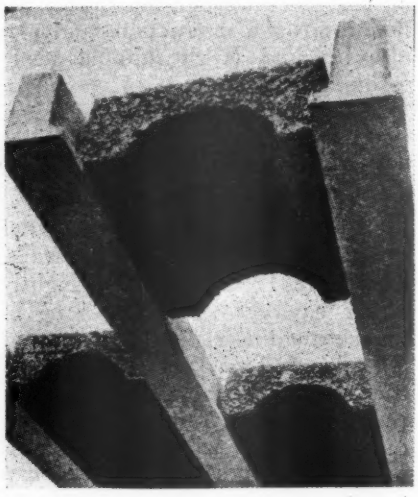


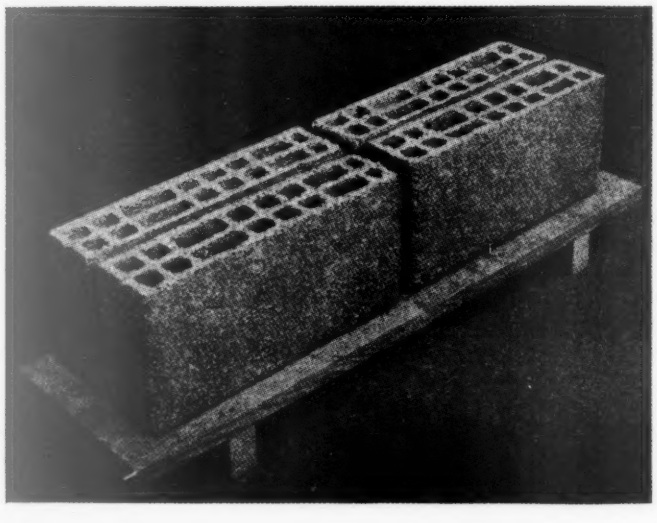
Fig. 2. Casco joints and filler blocks.

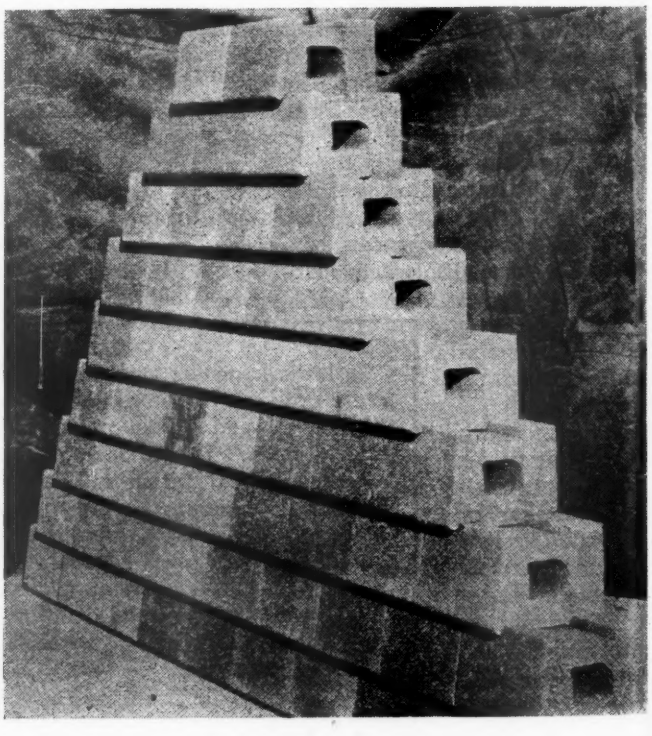
Already well established is the Smith fireproof floor. The firm is a subsidiary of the manufacturers of the Trianco block machine with which the special floor blocks are produced. The shape of these blocks is designed to give a continuous soffit. The floor is constructed on a patented telescopic and adjustable centering which requires no jacks or supports, being supported entirely by the walls which are to carry the floor. Reinforcement is laid in two directions and the floor slab is poured in the usual way.

Another specialized type of block exhibited was the Winget-Cubitt continuous cavity block, consisting of two separate leaves of foamed-slag concrete joined together by steel ties. The production of these blocks was described in the May, 1947, issue of PIT AND QUARRY. Eight-inch walls built with these blocks are claimed to have a heat insulation value of U = 0.18, as compared with U = 0.30 for an 11-in. clay brick wall with 2-in. continuous cavity.

Turning now to the equipment exhibits, the most prominent are the concrete mixers, examples of which were shown by some 15 different manufacturers. They can be divided generally into tilting types for hand feed, non-tilting drum mixers with skip loaders, and pan mixers. The skip loaders are generally operated by wire ropes, but in one case a hydraulic ram is used. Some models

Fig. 1. Below, left: Four Acheson "Speed Blocks" as they leave the machine. Note the cavities in each block and the solid center-line. Fig. 3. Below, right: Casco "Dri-Crete" blocks, showing the effect of siding.





have automatic shaker gear for the skip, and the better grade mixers are fitted with syphon-type water meters. The pan-type mixers can be mounted on a mobile gantry so as to deliver into trucks, a skip-loader being incorporated to fill the mixer. They can have a pair of large rollers resting in the pan to knead the mix where semi-dry concrete is required. Normally the rollers act by their own weight only, but they can also be spring-loaded for use with cinder concrete, the clearance between the rollers and the bottom of the pan being adjusted so that the cinder is crushed to any required size during mixing.

An interesting piece of equipment offered by Stothert & Pitt Ltd., for use with their mixers, is a portable batch weigher (Fig. 4). It is for use with their non-tilting mixers up to 10-cu. ft. capacity and is intended to be hand fed, but can also be supplied from a hopper. It consists of a batch-weigh hopper with dial-type scales, mounted on a wheeled chassis running on a short length of rail track laid on the ground. After filling and weighing, it is pushed along the track until it stands astride the mixer skip into which it is discharged. It is then pulled forward again to the filling position, allowing the skip to be raised to fill the mixer.

A volumetric batching device offered by Millars Machinery Co. consists of a gauge box with an adjustable division plate which rests in the mixer skip during filling. By pressing a catch, the materials are dumped from the bottom of the box as it is lifted out of the skip. This firm exhibited also a new mobile weigh-batching plant, mounted on four truck wheels and capable of being towed on the highway at speeds up to 20 m.p.h. No erection or dismantling is required when moving from site to site. The plant consists of four bins, each of 2½-cu. yd. capacity and intended to be fed by a clamshell. Under the bins are two travelling weigh-batchers, each of ½-cu. yd. capacity, with dial-type scales, suspended from tracks so that they can be run under any of the bin outlets. Extension tracks may be fitted so that the batch-weighers can be run out from under the bins to deliver at any required point; they are propelled along the tracks by hand-operated chain-and-pulley gear.

In the field of block-making machines there is not much to report, as European manufacturers still have a very long way to go before catching up with American developments. Some half dozen manufacturers exhibited small hand-operated block machines, some fitted with electric or pneumatic vibrators. The only advanced type of machine is the Trianco, which was shown in automatic (Fig. 5) and semi-automatic models. These machines have a mechanical jolting arrangement in place of the more conventional vibrator; stripping is automatic, the blocks being produced on cored wood pallets. In the automatic machine the material is fed into the mould from a hopper by means of a short conveyor belt about 18 in. wide, corresponding to the length of the blocks. Blocks are made one at a time, but because of the high rate of operation, outputs up to 3,000 blocks per day are possible. Off-bearing is by hand, by means of a special aluminum carrier, the blocks being stacked immediately. So as to avoid carrying them long distances to the stack, the machine is mounted on rollers so that it can be moved down the length of the shop. Mixed concrete is delivered to the machine hopper by a skip travelling on overhead rails, from a mixer at the end of the shop. Several block machines can be operated under a single set of overhead rails. The mixer used is the Trianco paddle mixer, which was in fact the only example in the show of the trough-type mixer so familiar in American block plants.

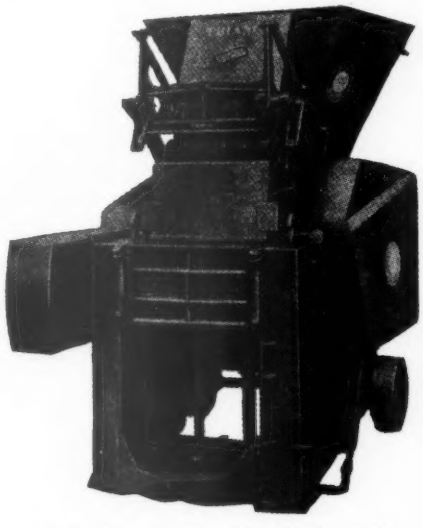


Fig. 5. Trianco automatic block machine.

Several cement manufacturers took space at the exhibition, the largest exhibit being that of the Cement Marketing Company, manufacturers of portland, high-early, extra rapid-hardening, water repellent, high-alumina, white and colored and other types of cement. A new product known as Tyrolean "Cullamix" is a ready-mixed colored cement and aggregate which is applied to walls by a machine which produces striking decorative effects. Air-entraining cement is not marketed, but manufacturers offer a great variety of products for treating cement and concrete for waterproofing, coloring, etc. There are a number of white and colored portland cement paints available and these were shown in various exhibits. An interesting exhibit in this field is "Cheecol," a plasticizer added during mixing. Using this material it is possible to place the coarse aggregate in the forms by itself, afterwards pouring or pumping in a mixture of sand, cement, water and Cheecol, the fluidity of

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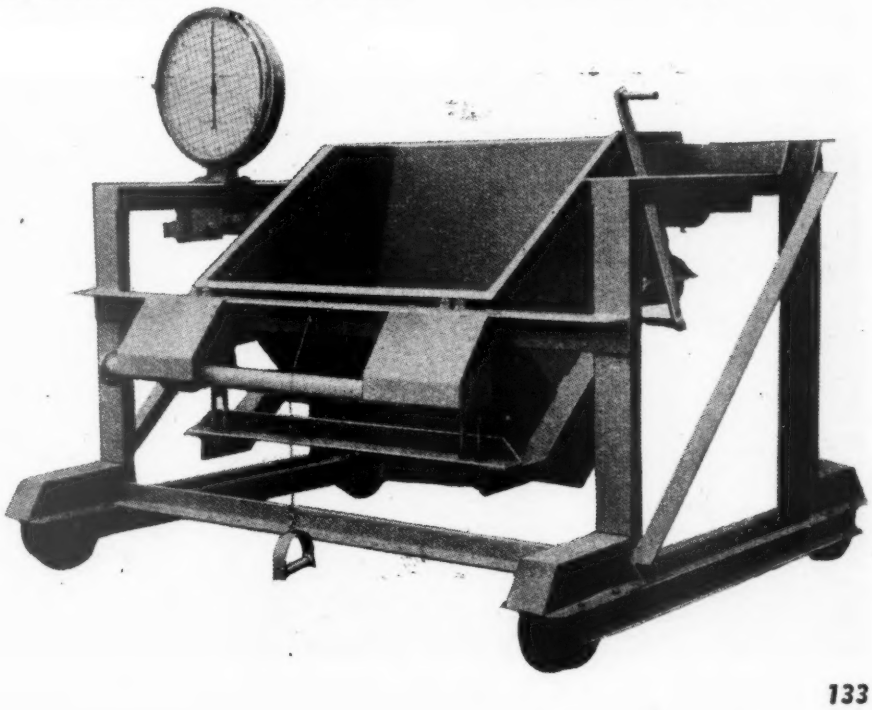
Fig. 4. Stothert & Pitt mobile weigh-batcher.



Parisian Brothers Run "Borrowed Shoe String" Into Outstanding Block Plant

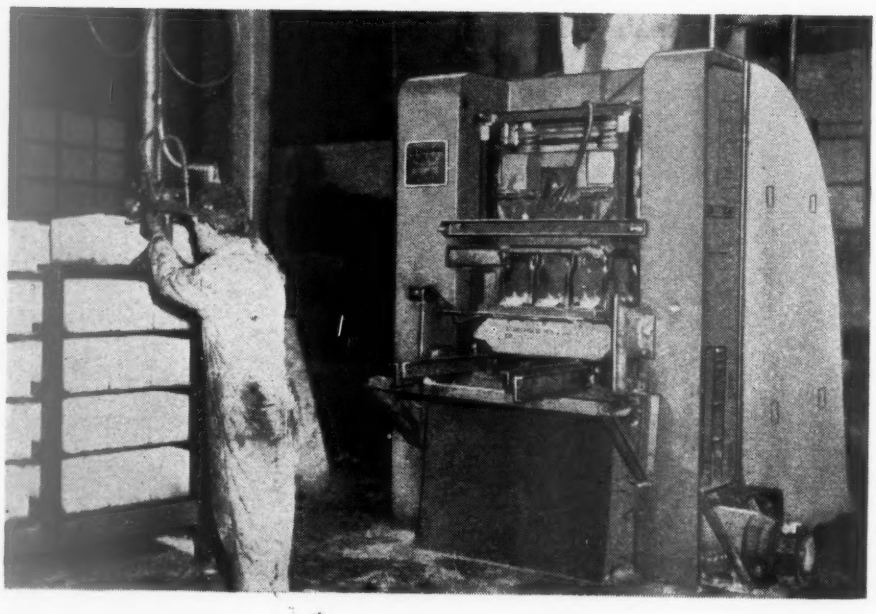
New "15" Block Machine Increases Output To 10,000 Daily—Still Far Short of Demand

another ON THE SPOT report

TO us one of the fascinating aspects of the concrete masonry industry is that even in the process of becoming relatively big it has continued, in the best Horatio Alger tradition, to offer outstanding opportunities to newcomers with little capital but lots of determination. We were reminded of this several weeks ago when we called on Standard Block & Supply at Lansing, Michigan, and spent a pleasant day with the Parisian brothers (George and Dick) who own and operate the plant.

By WILLIAM M. AVERY

Their involvement in the block business dates back no further than October, 1939, when they purchased from their father, R. L. Parisian, a low-production, entirely hand-operated plant on the site of their present operations in Lansing. The modest amount of capital for this more-than-modest flyer in the block business was borrowed, a fact which would seem to indicate that gambling on long shots is still not confined to race tracks. As the brothers phrase it, they started out on a shoe-string, and a borrowed one at that.



Their description of the original plant, no vestige of which remains today, suggests that in respect to mechanical refinements it could very well have been designed by the ancient Egyptians. The two owners did all the work themselves, from recovering aggregates in a nearby gravel pit, to molding, selling and delivering the daily output of about 700 units. Aggregates were hand-shoveled into a small truck at the pit, and fed in the same fashion from the truck directly into a home made tub mixer. The mix was discharged onto the floor, and was shoveled from there into the block machine. Freshly molded units were hand-carried from the machine to curing piles, and the following day were moved to the storage yard in a wheelbarrow. When a day's production had been sold and delivered, the two brothers tore back to the plant to turn out more units to sell the following day.

When a salesman called at the plant, one of the brothers would shake hands hurriedly and immediately rush back to the block machine to keep production from bogging down, for the loss of even a few units a day was a serious matter. Any sales appeal the visitor wanted to get across had to be imparted on the fly, after deciding whether to pursue George in his orbit between the block machine and the curing piles or Dick as he

• A general view of the Standard Block & Supply plant at Lansing, Mich. The light structure on the right is the building supply warehouse, located above the original curing kilns. The new structure (left) has not quite engulfed the old frame building, a portion of which is still visible in front of the bin.

• A view of the new automatic plain-pallet block machine which was installed last spring. With its peak capacity of eighteen 8-in. equivalents per minute, this machine is said to have the highest production of any on the market today.

wheeled cured blocks to the storage yard. They thought some of furnishing visitors with roller skates but decided the floors were too rough for comfortable skating.

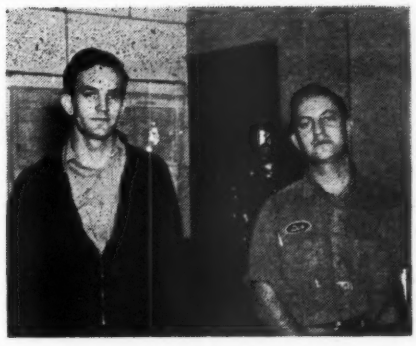
After a winter of this strenuous pace they decided to install a used Anchor tamper in order to increase production. The local bankers, however, took a dim view of their prospects, and turned them down on a loan for just the down payment on the machine. With characteristic resourcefulness, the brothers immediately slapped mortgages on their jalopies and went merrily on.

In the spring of 1942 a rebuilt Stearns No. 7 Joltcrete was installed, and production was set up on a somewhat less backbreaking basis by the additional purchase of a hand-operated lift truck and a number of wood racks. By this time, too, the business could afford to hire some badly needed manpower, and the owners were able to cut down their purchases of arnica and liniment. In 1945 a boiler plant was installed, and five kilns were built with a total capacity of 4,200 units. Over the kilns, which covered an area approximately 40 feet square, they built a warehouse for the storage of a complete line of building materials. As early as 1940 they had commenced stocking whatever materials they could afford to buy, and this phase of the business had expanded so rapidly that storage space was a major problem. Today the company's material business, apart from concrete masonry units, grosses $20,000 to $25,000 per month.

As soon as the kilns were completed in 1945, two-shift operations were begun in an effort to keep pace with the tremendous demand for masonry units. With five men working on each shift, production was stepped up to 4,000 units per day. Late in the year an Erickson power lift truck was purchased.

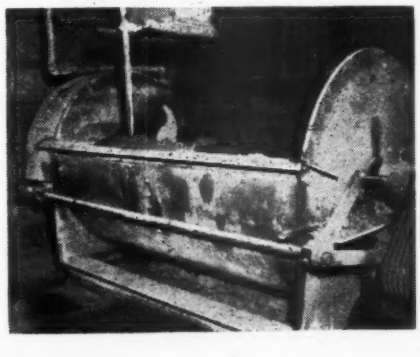
Even with this respectable output the company rapidly built up a formidable order backlog, and late in 1946 the brothers decided to undertake a complete expansion program with adequate provision for future growth. Although at this time there had been no formal announcement of the new Stearns "15" automatic plain pallet block machine, the Parisian brothers were in close touch with the development, and the tremendous production potential of the new machine appealed to them strongly. An order was placed at once and work was begun immediately to prepare handling, storage, batching and mixing facilities.

In order not to interrupt production in the old plant, it was decided to build the new plant around it, and the first step in this process was the erection of elevated storage bins adjacent to the existing 35- by 75-foot building. The Buffalo steel tank used for this purpose has four main compartments for the storage of 120 cubic yards of aggregate (total), and a center compartment which holds 300 barrels of bulk cement. There are two elevators—one for handling aggregates and the other for cement. Both elevators are fed from truck hoppers. Five valves grouped closely together at the bottom of the bin make it possible to discharge the materials by gravity directly into a volume batching box, which in turn feeds into a Stearns 50-cubic foot mixer located directly below. The mixer rests on



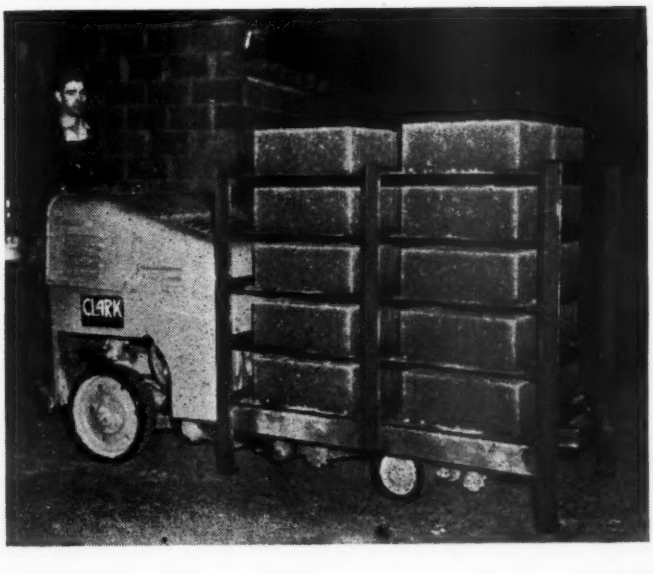
• The ownership, management and active supervision of the business are shared by George (left) and Dick Parisian.

• Two elevators feed aggregates and cement into the 120-cu. yd. 5-comp. bin.



• Below, left: The 55-hp. boiler, which furnishes steam for curing and for heating the plant, is stoker fired.
• Below, right: One of the lift trucks hauls a rack containing 20 chimney blocks from the curing area to outdoor storage.

• Right: The 50-cu. ft. paddle mixer is located directly under the storage bin.



a platform suspended between the bin columns at sufficient height above floor level to allow ample room for installing the block machine directly below.

Upon completion of the bin structure, the new building, approximately 80 feet square, was built around the old plant, the walls and roof of which were removed on a piecemeal basis as the new work progressed. Thus the Joltcrete machine was kept in full production until the "15" was installed and ready to operate. The change-over was made on May 1, 1947, just five months after footings were poured for the new bin structure.

Representing the latest development in the art of molding concrete masonry units, the Stearns "15" is thought to be the highest production machine on the market today, with a peak capacity of eighteen 8-inch equivalents per minute. Both the pressure head and the mold assembly are vibrated, the former electrically and the latter mechanically. One of the machine's exclusive features is a rotary-type agitator in the feed drawer to insure quick and thorough breaking up of semi-packed masses before they enter the mold box.

The "15" turns out three 8-inch units (or equivalent) in each cycle of operation. The units are delivered to the front of the machine on 5/16-inch plain steel pallets measuring 18½ by 26 inches. Four 6-inch, six 6-inch, two 10-inch or 12-inch, or 40 brick are produced in each operating cycle. Once the machine is started production is continuous without further manual or control manipulation by anyone up to the time that the blocks are delivered to the front of the machine. Changes in mix consistency due to the amount of water present or the gradation of aggregate can be compensated for instantly by manipulation of a quality control level located at the front of the machine. To date no details have been published on this important aspect of the new machine.

In the Lansing installation pallets are fed to the block machine in the conventional manner by hand loading a magazine at the rear of the machine. Now available with the "15" is a return pallet conveyor located at the front of the machine, enabling the operator to handle empty, as well as loaded pallets. With this system the racks are returned from the yard and spotted immediately in loading position at the front of the machine, with the pallets in place. Using the pneumatic off-bearer, the operator removes two pallets from the top deck of the rack and places them on the return conveyor. While he is doing this two pallet loads of finished block accumulate at the front of the machine. He loads these into the rack to replace the empty pallets just removed, and then picks up two more empties and places them on the conveyor.

The empty pallets are automatically brushed free of loose concrete, thoroughly oiled and wiped before they are discharged into the pallet magazine at the back of the block machine. In addition to eliminating the need for a man at the rear of the machine, this new system of pallet handling increases lift truck efficiency by cutting out one operation entirely—*i.e.,* the movement of racks from the rear to the front of the machine.

The layout of the machine floor at the Parisian brothers' plant has been arranged to provide for the future installation of two additional Stearns "15" machines—one on each side of the present unit. One of these additions is definitely scheduled for the Spring of 1948. A traveling weigh batcher will be installed in order to supply a second 50-cubic-foot mixer from the present bins.

The plant is still operating two shifts per day, and production with the "15" has averaged approximately 10,000 units daily, with the machine operating at the rate of 12 units per minute. The six-man day crew comes on at 6:00 a.m., greases the equipment and gets the plant in production by 6:45. The night crew, consisting of five men, takes over at 4:00 p.m., operates until 12:30 a.m., when the plant is shut down and cleaned up in preparation for the next day's operations. One cleanup serves for both shifts. During daylight operations two men working in the yard accumulate enough empty racks to carry the night shift. The 60-unit steel racks are handled with a Clark 3-ton gasoline-powered lift truck, with an older Erickson 2-ton unit held as standby equipment.

A relatively short curing cycle is in use at present because the capacity of the original kilns is inadequate for the plant's increased output, but four new kilns now under construction will bring molding and curing capacity back into balance. With nine kilns (total capacity 9,000 units) in operation the cycle will be approximately this: 1 hour for initial set; steam on for 1½ hours, or until the temperature reaches 165 or 170 deg. F.; and finally a soaking period of at least 12 hours. Live steam is jetted into the kilns through 1¼-inch pipes located at ceiling level. Steam is generated by a 55-hp. Johnson boiler fired with a Stokol stoker.

Standard's output of masonry units is about equally divided between cinder and sand and gravel.

• Standard's progressive policies are evidenced by this complete price list, printed as a part of an attractive advertising folder.

SIZE	TYPE OF BLOCK	CONCRETE YD.	CONCRETE DELIVERED	CINDER YD.	CINDER DELIVERED
4 x 8 x 16	Solid Slabs	.15	.165	.17	.185
	Hollow Slabs	.13	.145	.15	.165
8 x 8 x 8	Half Regular	.14	.16	.16	.18
	Half Corner*	.15	.17	.17	.19
	Half Sash*	.17	.19	.19	.21
8 x 8 x 16	Regular	.15	.17	.17	.19
	Corner*	.19	.21	.21	.23
	Pilaster	.21	.23	.23	.25
	Sash*	.21	.23	.23	.25
12 x 8 x 8	Half Regular	.17	.20	.19	.22
	Half Corner	.20	.23	.22	.25
	Half Sash	.23	.26	.25	.28
12 x 8 x 16	Regular	.21	.24	.23	.26
	Corner	.25	.28	.27	.30
	Pilaster	.27	.30	.29	.32
	Sash	.27	.30	.29	.32
16 x 8 x 20	Chimney Block—For 8 x 12 Flue Liner			.65	.75

Bull Nose Corner and Sash Blocks are .02 more than the regular Corner or Sash.

Delivery Rates indicated above are for Local Delivery (within 10 miles of our plant or the Capitol). Each 5 miles additional or fraction thereof adds the following:

4" Block..... .0075 8" Block..... .005 12" Block..... .015

A modern crushing and screening plant for processing cinders is being erected on the property. When this installation is completed, all cinders will be aged at least 90 days after they are crushed. Two stockpiles, totaling 10,000 cubic yards, will be maintained. The plant will be a closed-circuit, gravity type, fed directly from a ramp by dump trucks. Cinders will be reclaimed from the stockpiles with a Lessmann loader.

Sand and gravel are hauled to the plant from a nearby pit in the company's own dump truck. About 300 cubic yards of pea gravel and a small quantity of sand are stockpiled for emergency use.

The Parisian brothers are among the very few block plant operators we have talked to who have adopted a definite safety program. Initiated in January, 1947, the program had through October effected more than a 50 percent decrease in lost time accidents over the same period in 1946. This performance is all the more striking in view of the fact that the working force was about 25 percent larger during the 1947 period. One of the important features of the program is a monthly safety meeting attended by all employees. Open discussion at such meetings of hazardous practices, past accidents and trouble spots in the plant, has largely accounted for the sharp reduction in accidents. Including plant operators, truck drivers and warehouse workers, Standard's personnel now numbers 28 men.

The Parisian brothers are thoroughly aware of the importance of promotion and aggressive selling. Although "over-the-transome" business has been sufficient to market their entire output for the past several years, they have a definite advertising and selling program for the purpose of developing new outlets for their products. Their concrete masonry units are widely advertised under the trade name "Stanco Blocks" in the classified section of the telephone book, in local daily newspapers and in surrounding farm papers. The company's products are always represented in the classified section of a local daily newspaper, and several times each week special additional copy is used. Telephone book advertisements include several quarter-page insertions under different material classifications. In addition to direct sales in Lansing, Standard now distributes its products through lumber yards in a number of surrounding towns.

Both owners feel that coming up in the block business "the hard way" has given them a tremendous advantage. Their thorough first-hand knowledge of every operation in the plant, coupled with their ability and willingness to jump into any job at a moment's notice, has obvious advantages over swivel-chair and push-button management, and the Parisian brothers seem to have utilized such advantages to the utmost. They are understandably proud of their new, high-production machinery, but we think it is even more important and significant that they are openly and avowedly proud of the men who are operating that machinery. If there *is* such a thing as an unbeatable combination, we suspect that's it.

Concrete Masonry in 1947

(*From page* 128.)

personnel, with the result that direct labor costs in many plants were reduced to as little as 2 cents per unit. In referring to this trend at an industry meeting in New Orleans late in the year, R. E. Copeland, N.C. M.A.'s director of engineering, sounded a note of warning that the law of diminishing returns might make further reductions prohibitive.

Despite the uncertainties that loomed ahead, confidence was the dominant note in the concrete masonry industry at the outset of 1948. Although in most sections of the country clay products were back in the competitive picture, concrete block had won its main battle for recognition and acceptance. From this point of view the industry was unquestionably on a sounder footing than at any time in its history. There were certainly new battles to win and new heights to scale, but the industry had demonstrated conclusively that it had the vigor, the ingenuity and integrity to attain and hold for its product a firm place in the front rank of primary building materials.

Modular Coordination

(*From page* 130.)

won't do him any harm. Most of the excuses for the deplorable slowdown in labor would be eliminated because buildings would be built easily—everything would fit naturally. The mechanic would find little use for his 6-foot-rule—might even tire of carrying it, and this would permit the contractor to regain some of his lost prestige.

The contractor, released from the stultifying task of relating unrelated materials and arguing with labor, would resume his primary assignment of the efficient organization and conduct of building operations.

The manufacturer of material will be deprived of the pleasure of arguing with dealers and contractors, but he won't miss it because more buildings will be built than ever were dreamed of; and when he isn't solving production problems he can count his excess profits.

Coordination will not in any sense standardize the finished building; it standardizes parts without standardizing the building.

The concrete masonry industry is young and has proven its vitality and ruggedness. It is progressive and growing and has demonstrated its dependability. It is strong enough to lead the building industry out of confusion. This cannot be accomplished by conversation; it will be necessary to preach and practice a doctrine. You produce the new basic building material; you represent progress. No other basic industry can share your position. Continue the labor and struggle which has earned for you your position. You have the capacity and are the natural leaders in this emergency. Let the lethargy of the rest of the industry and the adversity you will encounter spur you onward.

British Building Exhibit

(*From page* 133.)

which causes it to penetrate throughout the aggregate and fill all voids, without any vibration. By use of a whisking machine, "Cheecol" can also be used for making light-weight aerated concrete.

To sum up, it may be said that the exhibition showed numerous interesting developments and gave ample evidence of an energetic and progressive industry only waiting for the government to give it the green light to go ahead and rebuild the damage of war and to catch up with the arrears of eight years during which only building for essential purposes was possible.

Muzaffer Unsal of Istanbul, Turkey, will be the representative in that country for the Universal Concrete Pipe Machinery Company of Columbus, it was announced recently by E. M. Rymer, sales manager of the Universal Concrete Pipe Company affiliate.

Mr. Unsal, a graduate of the Massachusetts Institute of Technology, will have exclusive rights to sell Universal Machinery products in Turkey. He will establish his office in Istanbul and will handle contracts for other American firms.

Universal also has sales representatives in Portugal and Uruguay and a tentative arrangement with a firm in Mexico.

300 BLOCKS per HOUR

"Push-Button Cycle-Control"

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KENT VIBRA-TAMP

• A complete automatic cycle block maker combining vibration and tamping that responds to "PUSH-BUTTON CONTROL" and produces 300 quality blocks per hour. A rugged machine unexcelled in design, principle of operation and performance. Write for the illustrated Vibra-Tamp circular.

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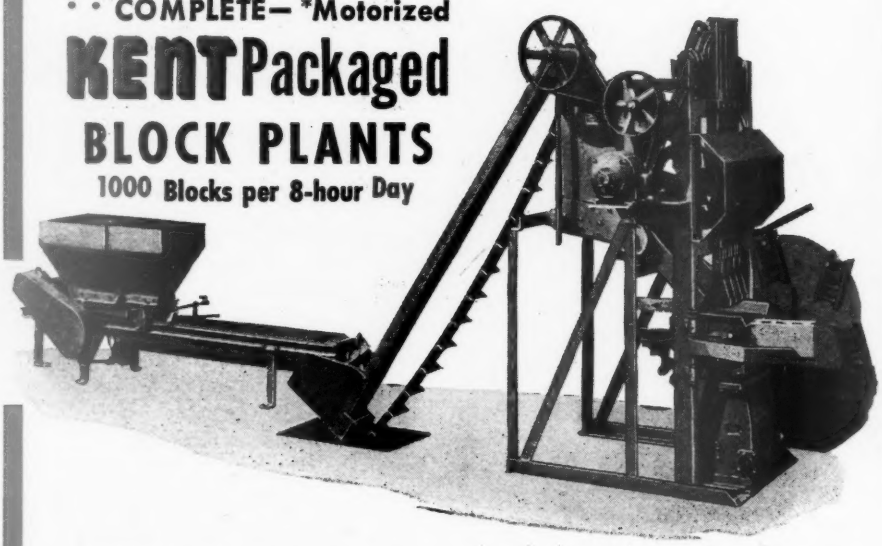
KENT Packaged BLOCK PLANTS

1000 Blocks per 8-hour Day



• The KENT Continuous Mixer delivers well-mixed concrete in a steady stream to the KENT Elevator which raises it to the KENT Feeder. From this the concrete flows into the easily operated KENT Stripper. The pull of a lever brings the KENT Tamper into operation for speedy tamping of dense block. The hopper "strikes-off" the blocks smoothly. It is then raised by an easily operated lever and swung to one side on the "take-off". At the right of the stripper stands the KENT Dunker which keeps pallets constantly in fine condition. Furnished with 1000 pallets, 25 three-deck curing racks and lift truck.

*Larger KENT plants are available; also units for belt drive and combinations having the KENT Batch Mixer, instead of the Continuous Mixer. Use the coupon below to obtain any desired information quickly and easily.

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☐ Plant illustrated above ☐ Plant with Batch Mixer

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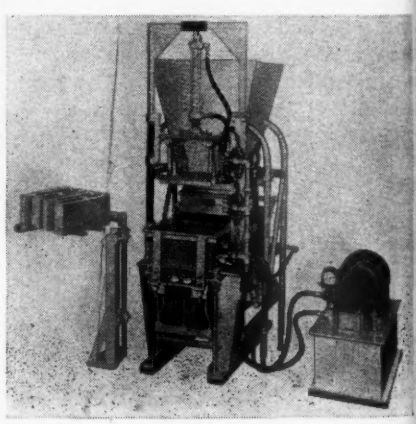
NEW MACHINERY and SUPPLIES

● Lift Upright for Fork Trucks

Clark Tructractor, Battle Creek, Mich., reports a new-type lift upright which provides higher tiering capacity. The device has been used on Clark "Car-

loader" and "Utilitruc" models and is now standard on "Clipper" models.

The overall height of the basic standard lift is 83 inches with forks lowered and permits passage through 7 foot doors. Maximum tiering height has been increased from 108 to 124 inches. The complete range of lift heights varies from 72 inches to 132 inches.

● Concrete Block Machine

The George "Hydraulic Press Pac" machine utilizes a combination of vibration and hydraulic pressure. While the mold is vibrating, the Press Pac head, under 2,400 lbs. pressure, works up and down in the mold box 6 to 10 times. The service hopper and stripper carriage are also hydraulically powered. Capacity ranges from 400 to 480 units per hour. F. C. George Machine Co., Orlando, Fla.